

PATH Support to Ukraine to Implement the National Tuberculosis Program: Final Report

Including Child Survival and Health Grants Program Final Evaluation Report

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Acronyms

ACSM	Advocacy, communication, and social mobilization
AIDS	Acquired immune deficiency syndrome
BCC	Behavior change communication
BCG	Bacillus of Calmette and Guérin
CSHGP	Child Survival and Health Grants Program
DIP	Detailed Implementation Plan
DOT	Directly observed therapy
DOTS	The internationally-recommended tuberculosis control strategy
DRRS	Data recording and reporting system
DST	Drug susceptibility testing
EMIS	Electronic management information system
EQA	External quality assurance
EQC	External quality control
EU	European Union
FGD	Focus group discussion
GFATM	Global Fund to fight AIDS, Tuberculosis, and Malaria
GHC	General health care
HIV	Human immunodeficiency virus
HLWG	High level working group
HPI	Health Policy Initiative
IEC	Information, education, and communication
IPC/C	Interpersonal communication and counseling
ITP	F.G. Yanovsky Institute of Tuberculosis and Pulmonology of Academy of Medical Sciences of Ukraine
IUATLD	International Union Against Tuberculosis and Lung Disease
KAP	Knowledge, attitudes, and practices
KIT	Royal Tropical Institute (Netherlands)
KMAPE	P. Shupik Kyiv Medical Academy of Post-Graduate Education
KNCV	KNCV Tuberculosis Foundation (Netherlands)
M&E	Monitoring and evaluation
MDR	Multi-drug resistant
MIS	Management information system

MOH	Ministry of Health
<i>Mtb</i>	Mycobacterium tuberculosis
NGO	Nongovernmental organization
NIS	Newly Independent States (of the former Soviet Union)
NRL	National reference laboratory
NTP	National Tuberculosis Control Program
PATH	Program for Appropriate Technology in Health
PHC	Primary health care
PLHIV	People living with HIV/AIDS
PVO	Private voluntary organization
QA	Quality assurance
QC	Quality control
SES	Sanitary epidemiological station
TASC2	Technical Assistance Support Contract II
TB	Tuberculosis
TOT	Training of trainers
URCS	Ukrainian Red Cross Society
USAID	US Agency for International Development
VCT	Voluntary counseling and testing
WHO	World Health Organization

I. Executive summary

A. Background

Increased numbers of tuberculosis (TB) cases, coupled with a rise in human immunodeficiency virus (HIV) and multi-drug resistant TB (MDR-TB), are a significant public health problem—as well as an economic threat—in Ukraine. TB rates more than doubled in Ukraine between 1992 and 2002, a result of the economic and social challenges that came with independence, stabilizing by 2004 at 82 notified cases per 100,000 population, the eighth highest rate of 53 countries in the World Health Organization (WHO) European Region. This represents an estimated 40,000 TB cases per year.

Ukraine faces a number of challenges in TB control: strategies inconsistent with international recommendations and resource use that is not cost-effective. Ongoing use of mass photo-fluorography and annual tuberculin screening of children for active case detection, multiple BCG (Bacillus of Calmette and Guerin) re-vaccination, mandatory and lengthy hospitalization of smear-positive patients, TB diagnosis restricted to specialists (even in cases confirmed by a laboratory), and long-term follow-up of patients after completion of treatment contribute to inefficient and ineffective TB control. All of these activities illustrate the underlying issue in TB control in Ukraine: namely that there has been a strong commitment to Soviet-style TB practices among both policymakers and providers, and hence, significant resistance to adopting the internationally-recommended TB control strategy (DOTS). It was in this context that international donors and partner organizations began work to support Ukraine in modernizing its TB control system in 2000.

B. Brief description of the project and its objectives

In 2003, the US Agency for International Development (USAID) funded a PATH Child Survival and Health Grants Program (CSHGP) proposal with US\$1.5 million for three years (October 2003–September 2006). The Detailed Implementation Plan (DIP) was approved in June 2004. The USAID Regional Mission for Ukraine, Belarus, and Moldova (USAID Regional Mission) in Kyiv City provided an additional US\$1 million to the program for fiscal year 2005. The objectives of the PATH project were to:

- Improve capacity for DOTS expansion by advocating for political support, including appropriate legislation and assistance in developing pilot sites.
- Improve the quality of diagnostic services in selected oblasts.
- Improve the use of monitoring and surveillance data for TB program management.
- Reduce diagnostic delay, increase case detection, and improve treatment adherence.
- Improve provider practices by improving capacity to diagnose and treat TB based on the DOTS strategy, and enhance knowledge and response to TB/HIV interaction.

PATH worked closely with oblast and city TB control programs to demonstrate the feasibility and appropriateness of the DOTS strategy, and promoted adoption of effective TB control policies by the national government. PATH continued and complemented support from other

agencies (WHO and the Netherlands-based KNCV Tuberculosis Foundation [KNCV] and Royal Tropical Institute [KIT]) and led the process of expansion.

C. Main accomplishments of the project

In three years of CSHGP project work, PATH has contributed to significant progress in TB control in Ukraine:

- New national and oblast legislation and policy documents supporting modern TB control standards, the creation of a central coordinating unit for the National Tuberculosis Control Program (NTP) within the Ministry of Health (MOH), and increased demand for DOTS training from other oblasts all speak to the increase in political commitment to TB control that has taken place in Ukraine. The strong partnership between USAID Regional Mission staff and PATH, WHO, and Policy Project staff has been very important in these successes.
- PATH has been instrumental in designing, introducing, and supporting adoption of a standardized paper and electronic management information system (EMIS) that is able to collect and analyze cohort data according to international standard practices.
- PATH has worked with in-country colleagues and partners to initiate major laboratory improvements in facilities, equipment, infection control practices, sputum smear microscopy, culture, and drug susceptibility testing so that, at the oblast level, a functioning laboratory network exists. There is now a quality control (QC) system in place.
- As a result of the project, more than 2,600 TB specialists, general health practitioners, laboratorians, and data managers have been trained in DOTS implementation. DOTS training is also being incorporated into the curricula of medical institutions for both pre-service and post-graduate (in-service) training. TB case detection has been incorporated into primary health care (PHC) settings as a routine activity.
- DOTS coverage in Ukraine has increased to cover more than 30 percent of the population, up from approximately 6 percent at the start of the project in 2003, when DOTS was being piloted in Donetsk Oblast and Kyiv City. Additional expansion to other oblasts is occurring with USAID funds through USAID's Technical Assistance Support Contract II (TASC2).
- A high level of understanding of TB transmission and symptoms continues in the general public.
- Training of providers to improve communication with their clients has had a very positive effect on client-provider relationships and has the potential to support further increases in treatment completion.
- PATH's work with the Ukrainian Red Cross Society (URCS) has resulted in a successful and sustainable model for TB patient support for treatment completion.

During the final evaluation, field observations in three oblasts (Kharkivska, Donetsk, and Dnipropetrovska) and in Kyiv City showed major improvements in the availability and use of program information and acceptance of the new strategy, with:

- Integration of detection of TB suspects with cough and directly observed therapy into general health facilities.

- Improvement in the quality of diagnosis, with a reduction of the proportion of TB cases without laboratory confirmation (in some oblasts, reduction of the total cases treated).
- Improvement of the coverage and quality of sputum smear examination.
- Analysis of sputum conversion and treatment outcome, and the reasons for results.
- Coordination with the prison system and inclusion of data from prisons in oblast statistics.

D. Highlights from the comparison of baseline and final evaluation surveys

It is early in the process to be able to point to TB outcome data that have changed as a result of project activities—PATH will continue to monitor these indicators to assess the ultimate success of the project. However, a number of substantial improvements have resulted from project activities (in concert with the work of partner organizations):

- A total of 14 new pieces of legislation in support of modern TB control standards were passed during the project period, and new national support for DOTS-based TB control exponentially increases the chances for sustainability.
- PATH's work with oblast staff to develop a management information system (MIS) resulted in 100 percent coverage of the project areas with a data collection system capable of generating standard cohort analysis indicators, where there had been no coverage at project start.
- The quality of sputum smear preparation for laboratory diagnosis increased dramatically. In Donetsk Oblast, for instance, acceptable-quality smears increased from 35 percent at baseline to 75 percent by 2006.
- As a result of PATH's collaboration with the URCS to pilot a social support intervention for TB patients, the proportion of treatment defaults in the two pilot areas of Donetsk Oblast went from more than 20 percent to zero. The URCS is expanding this program using its own resources.
- According to exit surveys conducted with TB patients, the proportion of people satisfied with their provider's explanation of TB treatment options went from 33 percent to 84 percent after PATH's work with providers on communicating with clients.
- Links are being built with the prison system in some project areas so that prison staff are trained in DOTS, and TB data are being exchanged with the public sector.
- Four TB training facilities have been established in the project areas, and faculty members are drawn from PATH-trained oblast staff, for the most part, ensuring in-country training capacity.
- Project activities have received ongoing funding through USAID for further expansion and consolidation of gains, with a high likelihood of success.

E. Priority conclusions from the final evaluation

The PATH strategy has been shown to be appropriate, and the changes observed in the pilot areas for DOTS implementation are substantial in comparison with the previous status. While

tremendous progress has been made, much work remains to be done to consolidate gains that have been made and ensure sustainability. The final evaluation noted the following areas for continued improvement or new support from PATH:

- The new national-level policies and guidelines should be institutionalized in procedural manuals for health facility staff and incorporated into ongoing trainings.
- Program monitoring and evaluation, particularly at the national level, need strengthening and continued support to improve the use of data for guiding program decisions.
- Laboratory external quality assurance (EQA) should be expanded beyond panel testing to include slide rechecking. A system for quality assurance (QA) of supplies and equipment, particularly culture media, should be instituted.
- Drug supply management and drug QC issues should be addressed as a priority identified by providers across Ukraine.
- Advocacy, communication, and social mobilization (ACSM) activities should transition away from general education efforts to focused messages on specific topics and to social mobilization and community support for TB control.
- Mechanisms for integration of TB and HIV services should be introduced and evaluated for larger-scale roll-out.

PATH (and WHO) should support accelerated DOTS expansion (through training and supervision); program sustainability (by supporting the NTP management team and developing a medium-term plan); and program quality (by disseminating best practices from selected oblasts, supporting additional laboratory quality improvement, and introducing the new strategy in formal medical and nursing curricula). Continued financial support from USAID and other donors is essential to consolidate the achievements, expand the strategy, and ensure sustainability and impact.

II. Assessment of results and impact of the project

A. Summary chart

Table 1 on the following page reports project results using the indicators selected for each of the five objectives. In a number of instances, baseline data were not readily available, either because Ukraine did not collect those data at project start, or data definitions were different and were not calculated in the same manner. With a few exceptions, end-of-project data show improvements over baseline figures. Indicators under Objective 1 demonstrate the significant gains made in increasing political commitment to a DOTS-based strategy. Objective 2 indicators show the marked improvements that project areas made in the quality of laboratory diagnosis of TB. Data for Objective 3 confirm the progress made in establishing a standardized data collection and analysis system. Data provided for Objective 4, which relates to education and outreach, in general show small increases in the public's already high level of knowledge about TB. Under Objective 5, indicators show good improvement in client satisfaction with client-provider interactions. The most challenging indicator to interpret is 5.3, the smear conversion rate. In both project areas for which data were available at baseline, successful smear conversion decreased by approximately eight percent over the project period. This may represent an actual decrease in

smear conversion or an artifact of the data. For example, decreases may have occurred because of increases in the quality of sputum smear examination or in data collection and reporting. These results warrant further investigation and ongoing monitoring to determine whether corrective action is needed.

Table 1. Summary chart of project results by objective.

Objective 1: Improve capacity for DOTS expansion within Ukraine by advocating for political support for DOTS at all levels of government, including facilitating the development of an appropriate legislative base in support of newly introduced TB control approaches, and by assisting the government with DOTS "expansion preparedness" to pilot sites.

Indicator	Baseline	Achieved
1.1. Percentage of national and oblast authorities supporting DOTS	86%	92%
1.2. Number of new pieces of legislation in support of DOTS (TB control approaches recommended by WHO)	2	14
1.3. Selection of "expansion oblasts" made	2 (Donetska Oblast and Kyiv City)	5 (Donetska, Dnipropetrovska, Kharkivska Oblasts and Kyiv and Sevastopol Cities)
1.4. Number of project partners, key local TB experts, and officials attending regional or international technical conferences and meetings and participating in annual national TB symposia	0	750

Objective 2: Improve the quality of TB diagnostic services in at least two oblasts by designing, implementing, and building capacity to sustain QC procedures for smear microscopy, culture, and drug susceptibility testing, and, if possible, evaluating improved technologies for TB case detection.

Indicator	Baseline	Achieved
2.1. Percentage of pilot facilities proficient in smear microscopy	Donetska Oblast–N/A Kharkivska Oblast–N/A Dnipropetrovska Oblast–N/A Kyiv City–N/A Sevastopol City–N/A	Donetska Oblast–72% Kharkivska Oblast–95% Dnipropetrovska Oblast–91% Kyiv City–94% Sevastopol City–80%
2.2. Percentage of smears that are readable and are of adequate quality	Donetska Oblast–N/A Kharkivska Oblast–N/A Dnipropetrovska Oblast–N/A Kyiv City–N/A Sevastopol City–N/A	Donetska Oblast–75% Kharkivska Oblast–65% Dnipropetrovska Oblast–80% Kyiv City–95% Sevastopol City–95%

Indicator	Baseline		Achieved	
2.3. Proportion of positive smears among all smears analyzed at Level I and II laboratories	Donetska Oblast	I. 0.03% II. 9.8%	Donetska Oblast	I. 5.5% II. 15.2%
	Kharkivska Oblast	I. 0.013% II. 8.4%	Kharkivska Oblast	I. 1.8% II. 12.2%
	Dnipropetrovska Oblast	I. 0.027% II. 9.3%	Dnipropetrovska Oblast	I. 0.46% II. 16%
	Kyiv City	I. 0.51% II. N/A	Kyiv City	I. 2.24% II. 32.8%
	Sevastopol City	I. 0.8% II. 6.4%	Sevastopol City	I. 2.5% II. 9.4%
2.4. Percentage of laboratories capable of identifying <i>Mtb</i> through culture		N/A	Donetska Oblast–17% Kharkivska Oblast–14% Dnipropetrovska Oblast–12% Kyiv City–12% Sevastopol City–10%	
2.5. Percentage of Level II and III laboratories performing TB drug susceptibility testing		N/A	Donetska Oblast–100% Kharkivska Oblast–100% Dnipropetrovska Oblast–100% Kyiv City–100% Sevastopol City–100%	
2.6. Number of laboratory training workshops held	Donetska Oblast–N/A Kharkivska Oblast–N/A Dnipropetrovska Oblast–N/A Kyiv City–N/A Sevastopol City–N/A		Donetska Oblast–8 Kharkivska Oblast–6 Dnipropetrovska Oblast–4 Kyiv City–7 Sevastopol City–2	
2.7. Number of oblast or central laboratories strengthened by region (e.g., training, equipment, and/or supplies provided)	Donetska Oblast–N/A Kharkivska Oblast–N/A Dnipropetrovska Oblast–N/A Kyiv City–N/A Sevastopol City–N/A		Donetska Oblast–84 Kharkivska Oblast–42 Dnipropetrovska Oblast–50 Kyiv City–34 Sevastopol City–10	
2.8. Number of laboratory specialists trained by region	Donetska Oblast–N/A Kharkivska Oblast–N/A Dnipropetrovska Oblast–N/A Kyiv City–N/A Sevastopol City–N/A		Donetska Oblast–117 Kharkivska Oblast–86 Dnipropetrovska Oblast–70 Kyiv City–68 Sevastopol City–19	

Objective 3: Improve use of monitoring and surveillance data for TB program management by introducing and institutionalizing methods to monitor program performance at all health service levels.

Indicator	Baseline	Achieved
3.1. Proportion of population in target regions under surveillance system	0%	100%
3.2. Number of major WHO-recommended TB cohort indicators that can be accurately measured and monitored at the national, regional, and local levels	0	18
3.3. Proportion of routine monthly TB surveillance reports that meet established criteria	0%	100%

Objective 4: Reduce diagnostic delay, increase case detection, and improve adherence to TB treatment by stimulating timely and appropriate health-seeking behavior for TB symptoms; implementing specific community mobilization strategies; increasing awareness and understanding of TB transmission, symptoms, treatment, and cure among the general public, as well as among specific populations at risk; and introducing culturally sensitive treatment support strategies for TB patients and their families.

Indicator	Baseline	Achieved
4.1.1. Public awareness of TB transmission routes	90%	95%
4.1.2. Public awareness of need for early diagnosis and treatment	91%	94%
4.2. Proportion of population aware of at least two symptoms of TB	62%	65%
4.3. Proportion of population who know that TB is curable	63%	68%
4.4. Number of articles, radio shows, and television spots that accurately cover TB	Donetska Oblast–1 television and 2 radio spots in 120 broadcasts	Kyiv City and Donetska Oblast–1 television and 2 radio spots in 1,558 broadcasts

Objective 5: Improve provider practices by strengthening provider capacity to diagnose and treat TB based on DOTS, improving systems to support appropriate referral of TB cases, and enhancing knowledge of and response to TB/HIV interaction, with emphasis on appropriate counseling and client-provider interaction with emerging populations at risk.

Indicator	Baseline	Achieved
5.1. Percentage of patients satisfied or very satisfied with provider counseling and information dissemination	Feel comfortable: 81% Allow patients to share concerns: 51% Explanation of treatment options: 33%	Feel comfortable: 88% Allow patients to share concerns: 86% Explanation of treatment options: 84%
5.2. Percentage of patients using DOTS	Donetska Oblast–86% Kharkivska Oblast–0% Dnipropetrovska Oblast–0% Kyiv City–50% Sevastopol City–0%	Donetska Oblast–100% Kharkivska Oblast–100% Dnipropetrovska Oblast–100% Kyiv City–100% Sevastopol City–100%
5.3. Smear conversion rate after intensive phase of treatment	Donetska Oblast–76.1% Kharkivska Oblast–N/A Dnipropetrovska Oblast–N/A Kyiv City–65% Sevastopol City–N/A	Donetska Oblast–68.6% Kharkivska Oblast–64.9% Dnipropetrovska Oblast–72.3% Kyiv City–57.1% Sevastopol City–47.1%

Mtb: Mycobacterium tuberculosis.

B. Results: technical approach

1. Overview

Increasing numbers of TB cases, coupled with a rise in HIV prevalence, now estimated at 1.4 percent, and MDR-TB, are a significant public health problem—as well as an economic threat—in Ukraine. TB rates more than doubled in Ukraine between 1992 and 2002, a result of the economic and social challenges that came with independence. The WHO Report 2006 on Global TB Control estimated the actual TB incidence rate in Ukraine in 2004 (including diagnosed and undiagnosed cases) at approximately 101 per 100,000, the eighth highest rate of 53 countries in the WHO European Region. This represents an estimated 40,000 TB cases per year. They occur throughout the country, with higher concentrations of disease in the southern and eastern oblasts.

USAID is the main source of external funds for TB control in Ukraine. External partners supporting TB control in Ukraine are PATH, WHO, and the Health Policy Initiative (HPI) (managed by the Constella Futures Group, Inc., formerly the Futures Group). KNCV and KIT supported a project in Kyiv City for two years, with funding from the European Union (EU), until April 2005. Follow-up cooperative activities in Kyiv City have been continued by PATH. A DOTS pilot project in Donetska Oblast was supported initially by WHO; PATH was a subcontractor to WHO for behavior change communication (BCC) and later provided direct support to all components. National partners in TB control include the MOH, the F.G. Yanovsky Institute of Tuberculosis and Pulmonology of Academy of Medical Sciences of Ukraine (ITP, Ukraine's national TB institute), oblast and city authorities of the project sites (Donetska, Dnipropetrovska, and Kharkivska Oblasts and Kyiv and Sevastopol Cities), the URCS, and local nongovernmental organizations (NGOs). A World Bank loan for TB and HIV control (2002–2006), including US\$28.7 million for TB, had substantial delays in implementation, which resulted in loan suspension in 2005 and subsequent reinstatement in December 2006.

The Ukraine MOH, in partnership with those listed above, began implementing demonstration projects of the internationally accepted TB control strategy, DOTS, in Donetska Oblast in 2000 and in Kyiv City in 2002. Although it has taken time to overcome resistance toward DOTS, the results in DOTS pilot locations have been encouraging. By the beginning of 2003, however, DOTS covered only 6.1 percent of the Ukrainian population. The goal was to expand DOTS rapidly throughout the country to provide access to effective, low-cost TB treatment for all patients. This required DOTS training for health care providers and laboratory personnel, upgrading equipment and facilities, ensuring drug supplies, updating surveillance systems, supporting TB patients and families, and educating the public about TB and access to TB services.

USAID approved a CSHGP grant of US\$1.5 million to PATH for three years (2003–2006) to support TB control activities in Ukraine. A DIP for the project was submitted to CSHGP in April 2004 and approved in June 2004.¹ Reports on PATH activities for the first and second years of

¹ PATH. *Support to Ukraine in Implementing its National TB Program. Detailed Implementation Plan*. Cooperative Agreement GHS-A-00-03-00010-00. Seattle: PATH; 2004.

the project are available.² The USAID Regional Mission provided an additional US\$1 million in funding through CSHGP to expand project activities in 2005–2006.

The objectives of the PATH project were to:

- Improve the capacity for DOTS expansion by advocating for political support, including appropriate legislation and assistance in developing pilot sites.
- Improve the quality of diagnostic services in selected oblasts.
- Improve the use of monitoring and surveillance data for TB program management.
- Reduce diagnostic delay, increase case detection, and improve treatment adherence.
- Improve provider practices by improving capacity to diagnose and treat TB based on the DOTS strategy, and enhance knowledge and response to TB/HIV interaction.

This project has sought to accelerate the adoption of DOTS in Ukraine, which has long been resistant to changing TB control policies and practices first promoted during Soviet times. PATH's main strategy has been to support oblast and city TB control programs as a method of demonstrating the feasibility and appropriateness of the DOTS strategy as well as supporting national government adoption of effective TB control policies and guidelines. PATH also has forged important collaborative relationships with other key groups working to improve TB control, such as WHO, KNCV and KIT, and the World Bank, so that collective efforts might speed the advance of DOTS acceptance at the national level, as well as accelerate implementation in the regions. As a result, through comprehensive and mutually reinforcing efforts addressing all components of a successful TB control strategy, PATH has made important progress in facilitating change, both at national and oblast levels.

PATH technical assistance for TB control under the CSHGP project covered Donetsk, Dnipropetrovska, and Kharkivska Oblasts, as well as Kyiv and Sevastopol Cities, which comprise approximately 30 percent of Ukraine's total population and 29.5 percent of its reported TB cases.

2. Progress by intervention area

This section provides highlights of project progress by objective. A detailed summary of achievements for each project objective is included in Attachment A.

Objective 1: Improve capacity for DOTS expansion within Ukraine by advocating for political support for DOTS at all levels of government, including facilitating the development of an appropriate legislative base in support of newly introduced TB control approaches, and by assisting the government with DOTS "expansion preparedness" to pilot sites.

Over the last three years, PATH has worked closely with national and regional TB and health authorities, local technical partners, WHO, KNCV, USAID, the World Bank, the Constella Futures Group, and other donors and collaborating agencies to advocate for legislative changes

² PATH. *Support to Ukraine in Implementing its National TB Program. Annual Report.* Cooperative Agreement GHS-A-00-03-00010-00. Seattle: PATH; 2004.

to facilitate DOTS implementation and to bring TB policies and treatment protocols in line with international approaches and standards. During 2006 in particular, much progress has been made at the national level to move the country toward a DOTS-based strategy, including adoption of new national TB policy documents, creation of a central TB control unit, and increased commitment to modernizing TB control at both national and oblast levels.

Results and outcomes

Supported development and approval of the Second National Tuberculosis Control Program Plan. With support from PATH, a Working Group was convened quarterly to discuss and refine the draft plan for 2007–2011, with a draft being finalized in December 2005.

Contributed to the development of a National Tuberculosis Control Manual. The Working Group, with the help of PATH consultants, also actively participated in developing a draft National TB Control Manual based on international approaches. The last version of the manual received official endorsement from Prof. Yuriy Feschenko, Director of the ITP, and was finally approved by Ministerial Order (“On approval of the Guidelines on TB control in compliance with international standards,” #422/40) on June 27, 2006.

Conducted a review of the NTP. An outcome of developing the new national TB control program plan was a MOH request to conduct an evaluation of the current NTP. This evaluation took place in February 2006 and was led by PATH consultant Dr. Fabio Luelmo, a TB control expert. The evaluation team consisted of partners from PATH, the MOH, the ITP, TB facilities, and international professionals and organizations (e.g., USAID, WHO, the Constella Futures Group). The national evaluation team submitted its conclusions and recommendations to the Deputy Minister of Health and the ITP Director as the basis for finalizing the National TB Control Program Plan for 2007–2011. The recommendations also strongly supported the creation of a central coordinating unit for TB control within the MOH, which was officially launched in July 2006.

Revised legislative documents. A second Working Group, comprised of PATH TB Team experts, MOH specialists, Central Sanitary-Epidemiological Station (SES) authorities, ITP scientists, and various other research institute personnel developed a set of legislative documents aimed at improving the capabilities of health facilities to prevent TB transmission by codifying:

- State sanitary rules of management, maintenance, and job safety for TB microbiological diagnostics laboratories.
- State sanitary rules for organization and maintenance of TB facilities.
- Methodological recommendations on epidemic surveillance within TB facilities and TB outbreak areas.
- Regulations for TB microbiological diagnostics laboratories.
- Field standards on sterilization and disinfection of medical products.

A special roundtable meeting was convened in Skhidnytsya (April 26–29, 2006) to discuss the approaches, concepts, and progress of these documents. The ultimate versions were discussed

and approved by the Working Group and submitted to the MOH for ratification. A complete list of relevant new legislation to which PATH contributed is provided in Attachment B.

Raised awareness and improved acceptance of international approaches to TB control. PATH pursued a variety of approaches to build support for international standards and approaches among key national and sub-national TB and health authorities, including:

- Convening two national symposia. PATH, in collaboration with the MOH, convened a national symposium on involving family doctors in TB control (October 25–26, 2005, Kharkiv City). This symposium was held in conjunction with the Second National Congress of Primary Health Care and Family Doctors. Victor Yushchenko, the President of Ukraine, and Yuriy Polyachenko, Minister of Health, took part in the opening ceremony of the Second Congress. They both noted that TB control should be prioritized within health care reform efforts. About 60 TB project partners and TB authorities from various regions were funded by PATH to participate in the symposium. A symposium resolution was sent to the MOH, the ITP, and regional health administrations, calling for improved collaboration between TB control and family doctors and PHC structures. In June 2006, a second national symposium was convened in Kyiv City on international TB standards and approaches. PATH consultants Dr. Fabio Luelmo and Prof. Richard Urbanczik, from WHO's TB Laboratory Consultants Group, participated.
- Conducting study visits to Slovakia and Latvia. In May 2006, PATH supported 14 TB project partners and TB team staff to visit Slovakia, hosted by Dr. Ivan Solovic, Slovakia's NTP Manager. Through site visits and roundtables, Ukrainian authorities gained first-hand understanding of Slovakia's experience in involving PHC providers in DOTS, managing the TB drug supply, and maintaining appropriate surveillance. In June 2006, PATH supported the participation of 12 Ukrainians in a training course on MDR-TB treatment and management in Latvia, hosted by Dr. Vaira Leimane, Director of the WHO Collaborating Centre for Research and Training in Management of MDR-TB in Riga. Prof. Janis Leimans, Director, Latvia State Agency for Tuberculosis and Lung Diseases, gave a presentation regarding the NTP and TB control management and service structure in Latvia and participated in discussions with the Ukrainians regarding MDR-TB and HIV co-infection management, collaboration with social support services, and TB control approaches among vulnerable populations.
- Supporting participation in national and regional technical meetings and congresses. PATH supported about 160 local TB project partners to attend international and national TB technical meetings. The scientific programs of these meetings addressed the latest advances in clinical diagnosis and treatment of TB patients and allowed Ukrainian health authorities and TB specialists to share experiences and learn about the latest international approaches in global and regional TB control.
- Increasing access to up-to-date literature on international TB control approaches and experiences. From PATH's baseline assessment, it was clear that many TB and health professionals lacked access to up-to-date technical literature. To address this deficiency, PATH provided translated abstracts and articles from international journals and the Internet, as well as key STOP TB Partnership and WHO documents. Throughout the project, PATH also supported access to the Internet at TB project partners' sites. PATH established and

maintains a Ukrainian TB listserv that distributes news and literature related to TB control weekly.

Policy maker survey results. The follow-up survey of policymakers, conducted in September 2006, suggested that many of these efforts have contributed to progress in gaining political support for DOTS implementation. For example, there was some improvement in policy- and decision-makers' perception of the WHO-recommended strategy on TB. Ninety-two percent of participants responded that they believe it is possible to implement DOTS in Ukraine either as is or with some changes, compared to 86 percent in 2004. Only five percent stated that they do not think it is possible, and another three percent said they were not sure (in 2004, it was six percent and nine percent, respectively).

The survey asked respondents whether they were satisfied with current laws related to TB control and which regulatory and legal documents they felt needed further improvement to conform to international standards. Over the course of the project, the policy- and decision-makers appeared to have become more knowledgeable and critical about these documents. When respondents answered that existing laws were not sufficient to address TB/HIV co-infection, they were asked to specify the components of the laws that, in their opinion, needed to be added or revised. The responses were as follows:

- Integration and cooperation between TB services and HIV/AIDS (acquired immune deficiency syndrome) centers in treating patients with TB/HIV co-infection (14 percent).
- Treatment of TB/HIV co-infected patients with anti-TB and antiretroviral drugs and dealing with complications and side effects (13 percent).
- Protection of medical provider rights and regulation of the patient-provider relationship (11 percent).
- A TB/HIV co-infected patients' registry and case monitoring of TB/HIV co-infected patients (8 percent).
- Guidelines concerning the informing of family members about the HIV-positive status of TB patients (6 percent).
- Antiretroviral treatment using directly observed therapy (5 percent).
- Guidelines on detection and diagnosis of smear-positive TB/HIV co-infected patients (5 percent).
- Responsibility and charges for smear-positive TB/HIV co-infected patients who avoid treatment and legal aspects of their forced isolation (5 percent).
- Treatment guidelines for extra-pulmonary TB/HIV co-infected patients (3 percent).

Despite the generally positive trends that the survey revealed in policymaker support for DOTS and knowledge of TB control, it is also clear that continuing advocacy and policy reform are needed. Many respondents still believe that treatment results should not be based only on smear conversion and that the DOTS strategy does not take into consideration "clinical and radiological dynamics." Respondents (35 percent) also expressed concern that hospitalization under the

DOTS strategy is too short. PATH will continue to work with partners to solidify political commitment to DOTS at all levels.

Factors affecting achievement

Lack of centralized, clear TB leadership. While important progress has been made in recognizing the need for and taking steps toward creation of a central management unit for the NTP, the process has moved slowly. Accountability for the TB program remains shared between the MOH and the ITP. Currently, while an NTP manager has been assigned, she has little support and remains dependent on the ITP for technical guidance and support. The Director of the ITP, long an opponent of DOTS, remains in place, although his stance has softened over the last three years and collaboration with his Institute has improved.

Political instability. National-level work was complicated by the unstable political situation—namely the Orange Revolution in November 2004 and the parliamentary elections in March 2006, which caused a government crisis for the subsequent four months. During these periods, planned activities were temporarily suspended or slowed, while key MOH and other relevant governmental positions were left vacant or inactive.

Contradictory legislation still on the books. Although important progress has been made in reforming the legislative base to bring policy and practice guidance in line with international norms, other laws and orders that contradict the DOTS approach are still valid (mandatory mass screening with photo-fluoroscopy, mandatory hospitalization). Until this legislation is no longer in force, opponents of DOTS could still use existing laws and orders to create barriers to modernization of TB control.

Lack of coordination among donors and implementing partners. In the early stages of the World Bank loan to support TB and HIV capacity-building in Ukraine, the EU-funded KNCV project in Kyiv City, and the USAID-funded WHO and PATH work in Donetska Oblast, donors and partners had different opinions about acceptable and unacceptable alterations to the basic DOTS strategy. As a result, the MOH received differing messages about international norms, making progress on policy change more difficult. Partners and donors have since come together to present a united message to the Ukrainian government, which has contributed significantly to current progress.

Main successes and lessons learned, application of lessons learned to future activities, and potential for scale-up

Over the last three years, the Ukrainian government has made significant progress in bringing TB control policies and practice guidelines in line with international norms. Key successes include substantial reform in the legislative base, greater acceptance at all levels of the DOTS approach, creation of the NTP, and official endorsement of the new draft TB control manual and plan for 2007–2011.

It is essential to recognize that building political will, particularly in a post-Soviet environment, takes considerable time and resources and that it is essential to develop a process that stimulates local ownership and involvement. For example, creating working groups and similar mechanisms has contributed to advancing progress in Ukraine. In addition, PATH's work with partners at the

oblast level has created a “bottom-up” demand for TB control improvements that has supported national policy changes. A key lesson learned is that the time needed to invest in political change cannot be underestimated. The process is labor-intensive and at times very challenging. It is essential to find ways to demonstrate respect for strongly held concepts and to provide opportunities for gaining new perspectives that do not directly criticize the status quo.

The potential for scale-up is substantial, barring further political disruption. It is unlikely that oblasts now in the process of adopting DOTS will return to old practices, since the advantages and cost-savings associated with DOTS are quite clear and there is solid support for DOTS in a number of key oblasts. Further, TB and health authorities from other oblasts are now requesting assistance to adopt DOTS.

Objective 2: Improve the quality of TB diagnostic services in at least two oblasts by designing, implementing, and building capacity to sustain QC procedures for smear microscopy, culture, and drug sensitivity testing, and, if possible, evaluating improved technologies for TB case detection.

Over the last three years, PATH has collaborated with WHO and the government to characterize TB diagnostic needs, train staff, and strengthen approaches to QA and QC of smear microscopy at the central and oblast levels. The team explored possibilities for evaluating new technologies for TB diagnosis throughout the project period. In mid-2006, PATH identified a prospective TB diagnostic test and is now collaborating with its manufacturer to evaluate it in Ukraine. Because of the timing, funding to support PATH’s role in the evaluation is now being covered by the USAID Regional Mission through TASC2.

Results and outcomes

Developed methodological recommendations on standard TB diagnostic practices based on microscopy. PATH collaborated with P. Shupik Kyiv Medical Academy of Post-Graduate Education (KMAPE) laboratory specialists and the WHO country office to develop methodological recommendations, entitled *Laboratory Diagnosis of TB in Clinical Diagnostic Laboratories by Direct Microscopy*, for the laboratories of general health care (GHC) facilities. These recommendations were published by WHO and distributed through GHC facilities in the target oblasts. PATH also distributed copies to all partner TB laboratories.

Developed methodological recommendations to ensure QA of TB diagnosis in GHC laboratories. PATH collaborated with KMAPE laboratory specialists to develop a manual of methodological recommendations, entitled *TB Laboratory Diagnostic Quality Assurance Program: Sputum Examination for TB by Direct Microscopy*. These recommendations are aimed at GHC facility clinical diagnostic laboratories. The manual includes a description of optimal laboratory physical conditions, staining methods, microscopic examination of sputum smears, recording and reporting results, QA, and other key components of the sputum microscopy process. In addition, the guidelines include a description of key bio-safety measures necessary for safe practice in laboratories where sputum samples are being handled. Previously, no national recommendations on TB laboratory QA and QC had been developed. The guidelines developed by PATH and local partners constitute the only comprehensive, ready-to-use document on this topic in the country. Donetsk Oblast health authorities have approved these guidelines, and they formally

recommended that they be published and widely disseminated among GHC facilities throughout the oblast. Further, the manual was reviewed by the Special TB Commission of the ITP and the Ministry of Education and was approved as a teaching aid for laboratory specialists. The recommendations now form the basis for KMAPE-sponsored in-service training for all relevant personnel in the country.

Developed laboratory QA training materials and curricula. PATH finalized a set of training materials and curricula in collaboration with PATH consultant Carolyn Wallis, and in cooperation with KMAPE. The curricula are comprised of guidelines for training of trainers (TOT) and an adapted version for roll-out training. The materials include handouts, slides, overheads, and a video. Much of the content is based on existing materials from WHO and from the US Centers for Disease Control and Prevention, adapted for conditions in Ukraine. The objective of these QA trainings is to enhance knowledge and proficiency in conducting smear microscopy, with particular focus on QC. The workshops comprise classroom and laboratory components and cover all aspects of smear microscopy internal QC and EQA, including development of a QC manual that outlines the general QC approaches and procedures for equipment, media, reagents, susceptibility testing, and personnel in the laboratory. Standard operating procedures, accurate reporting of results, self-assessment, panel testing, and blinded rechecking of results also are addressed. In addition, participants are trained in accurate reporting of results. Initial plans to develop methodological recommendations on external and internal QC for culture and drug sensitivity testing were dropped, as there are no clear international guidelines or recommendations yet on these topics. An international working group is currently drafting such guidelines; however, countries will still need to adapt them according to equipment, supplies, and test media available locally. Until Ukraine has an established national reference laboratory (NRL), local recommendations cannot be developed.

Designed and conducted laboratory QA training. PATH developed a detailed training schedule for laboratory specialists in the target oblasts. Overall, PATH conducted 32 training workshops, involving 504 laboratory specialists, between 2004 and 2006.

Formed a laboratory network and established panel testing. PATH facilitated the establishment of a network among Level I, II, and III laboratories in Donetsk, Kharkiv, and Dnipropetrovska Oblasts, as well as in Kyiv and Sevastopol Cities. Level I laboratories perform sputum microscopy only, Level II laboratories perform both sputum microscopy and cultures, and Level III laboratories perform drug susceptibility testing in addition to sputum microscopy and cultures (see Table 2 below). The oblast-level TB laboratory system is integrated into the NTP, and the goal of the network is to institutionalize QA practices introduced through the project. The Donetsk Oblast Clinical TB Hospital laboratory is considered the regional referral laboratory because of its excellent performance, although it has not been officially recognized as such by national authorities.

Table 2. The laboratory system in Donetsk, Kharkivska, and Dnipropetrovska Oblasts and in Kyiv and Sevastopol Cities, 2006.

Level	Number of laboratories	Duties
Level I laboratories (including the penitentiary system)	Donetska Oblast–71 Kharkivska Oblast–48 Dnipropetrovska Oblast–51 Kyiv City–30 Sevastopol City–9	Ziehl-Neelsen smear microscopy examinations for acid-fast bacilli
Level II laboratories	Donetska Oblast–14 Kharkivska Oblast–6 Dnipropetrovska Oblast–6 Kyiv City–3 Sevastopol City–0	Duties of Level I laboratories plus inoculation of pathological material into Lowenstein-Jensen media for culture
Level III laboratories	Donetska Oblast–1 Kharkivska Oblast–2 Dnipropetrovska Oblast–1 Kyiv City–1 Sevastopol City–1	Duties of Level II laboratories plus drug susceptibility testing and organization of trainings, technical assistance, and QA for lower-level laboratories
Total laboratories	Donetska Oblast–86 Kharkivska Oblast–56 Dnipropetrovska Oblast–58 Kyiv City–34 Sevastopol City–10	

Under the supervision of PATH's TB Team, a protocol for EQA using panel testing and a set of panel testing smears was developed by local laboratory consultants affiliated with the Donetsk Oblast TB Clinical Hospital and in cooperation with laboratory specialists of the Donetsk City TB Dispensary. All 20 Donetsk City TB microscopy laboratories received the protocols, containers for glassware storage, and panels (of a batch of six smears) for the first stage of EQA—proficiency testing. The first EQA was conducted in September 2004; results were obtained in the following month. Panel testing was also introduced in Kyiv City. In 2005, training in EQA using panel testing was initiated in Dnipropetrovska and Kharkivska Oblasts and is ongoing. As a result of the final CSHGP project evaluation, PATH will also institute slide rechecking in project areas as an adjunct to panel testing. Table 3 shows the results of the panel testing for project area laboratories in 2006.

Table 3. Results of EQA for project area laboratories, 2006.

Region	Number of Level I and II laboratories	Proportion of accurate results from panel testing
Donetska Oblast	70	72%
Kharkivska Oblast	56	95%
Dnipropetrovska Oblast	44	91%
Kyiv City	33	94%
Sevastopol City	9	80%

Developed follow-up and monitoring plans. In each target region, PATH and local partners developed monitoring plans and schedules. Monitoring visits have focused on observing the procedures for all QC aspects of smear microscopy. The goal of the monitoring is to produce objective, valid, and reliable data on smear microscopy performance. The results are discussed in

staff meetings, specialized conferences, and with local authorities. As a rule, besides visiting a laboratory during the monitoring visit, accuracy of the prescribed treatment (based on DOTS-controlled treatment) is also reviewed. As a result of these visits, numerous procedures and systems in all regions were reorganized to improve efficiency and quality. In Kharkivska Oblast, for example, the head of the oblast TB laboratory, who has been actively involved in monitoring visits, decided to reorganize the laboratory network in the oblast. In Dnipropetrovska Oblast, the network also was reorganized: of 204 general health laboratories, 51 were designated as official smear microscopy centers, and all GHCs now have sputum collection rooms.

Factors affecting achievement

No designated TB NRL. The governmental body (MOH versus ITP) that will oversee the NRL and the network is still being debated and remains uncertain; the ITP has assumed this role so far, with a person in charge. The site for the NRL also remains uncertain; the best equipment and facilities are in the central laboratory in Kyiv City (over-developed for just routine TB program support at the city/oblast level). The Level III laboratory in Donetsk City, however, has received supranational accreditation, whereas the ITP laboratory in Kyiv City is reluctant to undergo this kind of review. The absence of an NRL hampered plans to strengthen drug susceptibility testing and drug resistance surveillance. In summary, until an NRL is established, a national laboratory network will not be able to function efficiently.

Conditions of laboratories and suspension of the World Bank loan. Status of facilities, equipment, and supplies in many laboratories remains poor, hampering the ability of laboratory workers to put new skills into practice. The suspended World Bank loan was to have covered costs for upgrading laboratories. Even the best EQA system cannot compensate for the lack of adequate equipment and supplies. With the recently announced re-activation of the World Bank loan, PATH expects that laboratory conditions will improve in 2007.

Process of reorganization has been slow. In some regions, reorganization plans were not fully implemented due to lack of resources, political resistance, or other factors.

Age of laboratory specialists. In general, Ukraine lacks qualified experts in the field of TB laboratory QC. In addition, more than 60 percent of laboratory specialists are approaching retirement age; therefore, many of the newly trained personnel may leave the workforce in the next few years, presenting a challenge for ongoing training and QA/QC activities as new staff are recruited.

Main successes and lessons learned, application of lessons learned to future activities, and potential for scale-up

The project successfully established and integrated TB QA/QC systems and practices into GHC laboratories. One of the most important achievements regarding PATH's laboratory strengthening component has been the establishment and integration of QA/QC systems and practices throughout the TB and GHC laboratory infrastructure in the target oblasts. Prior to the project, no QA/QC system existed. In addition to the introduction of panel testing, other TB-related laboratory practices were reviewed and revised to ensure better quality and improve laboratory safety and efficiency.

Project activities resulted in a significant increase in detection of active TB in GHC facilities (see Table 4 on the following page). PATH's experience suggested that once laboratory professionals were trained in QA/QC practices and understood their necessity, they were eager to implement new standards, which resulted in improvements in case detection through improved laboratory techniques.

Table 4. Proportion of positive smears detected among all slides examined at project area GHC facility laboratories.

Site	Detection before project implementation		Detection after project implementation, 2006	
	Level I	Level II	Level I	Level II
Donetska Oblast	0.03%	9.8%	5.5%	15.2%
Kharkivska Oblast	0.013%	8.4%	1.8%	12.2%
Dnipropetrovska Oblast	0.027%	9.3%	0.46%	16.0%
Kyiv City	0.51%	--	2.24%	32.8%
Sevastopol City	0.8%	6.4%	2.5%	9.4%

In general, TB Dispensary Chief Doctors became more attentive to their laboratories, often repairing the premises and investing in new microscopes using their own budgets. In addition, once GHC laboratory specialists were convinced that they could play a role in TB detection, they took the responsibility very seriously. All laboratory personnel were very interested in learning how to analyze data, review their QA results, and alter practices based on the findings. The guidelines that were developed proved critical to supporting these important changes at both national and oblast levels.

Incorporating training into in-service laboratory education helps support sustainability. Another important success has been the integration of training into in-service educational courses for laboratory personnel, both at the national and oblast levels. The guidelines developed by the project in collaboration with KMAPE and the ITP have now been approved by the Special TB Commission of the ITP and the Ministry of Education for training of laboratory personnel involved in TB diagnosis. This will be essential to sustainability, as laboratory specialists need to have access to regular refresher training. As the program moves forward, retraining of laboratory specialists regarding record keeping and the use of results to adjust program management will be especially important.

Objective 3: Improve use of monitoring and surveillance data for TB program management by introducing and institutionalizing methods to monitor program performance at all health service levels.

Results and outcomes

PATH's work to strengthen TB monitoring and surveillance in accordance with international standards has been extensive. It has required collaboration with a number of different players throughout the project to reach agreements on data elements and definitions. The result has been significant improvements in the reliability and validity of TB data collected in the project areas so that standard cohort analyses can be performed. This section focuses on project activities

related to data collection and analysis. Outcomes as measured by standard TB indicators are presented in Section II.D.

Revised and introduced data recording and reporting system (DRRS) forms. Over the last three years, PATH has worked with WHO, regional and national health authorities, the MOH/World Bank Project Implementation Unit (until the World Bank loan was suspended in April 2006), and KNCV (until the end of its project in March 2005) to develop a standardized TB MIS based on the WHO-recommended approach. As part of this effort, PATH staff reviewed all pertinent legislation concerning the TB MIS and followed up with negotiations with local TB authorities and local and international partners. Ultimately, a set of revised forms was introduced. These forms are currently used for registration, case management, and reporting in all project sites. Most important, negotiations are now underway for nationwide adoption of the new forms.

As noted in the mid-term report, throughout much of 2005, PATH was engaged in difficult discussions regarding the standardization of the forms. Common agreements concerning the total number of forms were finally achieved, but negotiations and consultations regarding design and content still continue. Nonetheless, according to the final evaluation report, a major achievement of the project is the availability of incidence data for all target oblasts, as well as cohort outcome data for Donetsk Oblast. A key challenge, however, is making sure the information now available is used for program improvement. This issue, as well as ongoing revision of definitions and forms, will be the focus of PATH's continuing activities supported through its current TASC2 TB Country Support Task Order.

Designed and introduced a TB EMIS based on revised DRRS forms. The TB EMIS was introduced in Donetsk, Kharkivska, and Dnipropetrovska Oblasts and Sevastopol City (Kyiv City uses a different electronic system designed by KNCV). PATH staff designed and supported the installation of the TB EMIS on 15 computers in Donetsk Oblast (13 at the rayon [district] level and two at the Donetsk Oblast TB Dispensary). Currently, therefore, each of 13 of 39 rayons in Donetsk Oblast has a functioning TB EMIS. In Kharkivska Oblast, 3 of 29 rayons manage TB cases electronically, and in Dnipropetrovska Oblast, 3 of 34 use a TB EMIS. In each of these oblasts, the remaining rayons manually enter data and send aggregated reports to the Oblast TB Dispensary for entry into the electronic system. In Sevastopol City, all cases are recorded electronically. It is important to note that the TB EMIS was designed to manage cases electronically at the rayon level so that cohort analysis can be conducted and can inform program management at that level. At the end of each quarter, an aggregated report on the key indicators is automatically created using the electronic system, and these data are sent to the oblast level for inclusion in a summary table. Because of delays in implementing the World Bank program, through which computers and software were to be procured for the surveillance system, introduction of the TB EMIS in all rayons was not possible.

As part of this effort, PATH established four TB training centers: one each in the Donetsk and Dnipropetrovska Oblast TB Hospitals, and one each in the Dnipropetrovsk and Kyiv City TB Dispensaries. PATH equipped these centers with computers and laptops, local area network connections, and teaching equipment. Two types of staff use the TB EMIS at two territorial-administrative levels: data entry clerks, who are present at the rayon and oblast levels (depending on the site); and data analysts, who are present at all levels. The PATH TB Team, in

collaboration with local partners, determined who should be trained during the first set of TB EMIS workshops at the oblast and national levels. The TB EMIS training plan was divided into three stages: training of oblast coordinators, TB EMIS expansion, and follow-up. A total of 154 specialists from the target regions have now been trained.

Developed tools and indicators for routine monitoring of diagnostic efficiency and effectiveness of existing and new TB screening methods and strategies. To facilitate routine monitoring of diagnostic efficiency and effectiveness of existing and new TB screening methods and strategies, PATH developed a manual entitled *Guidelines on Monitoring and Evaluation of Indicators for TB Diagnosis and Treatment Using Cohort Analysis in Ukraine*. These guidelines were finalized, and a total of 2,000 copies were printed and widely disseminated to all TB specialists throughout the country at all three administrative levels. The guidelines include detailed directions regarding data flow and management and indicator analysis and interpretation during the TB case diagnosis and treatment stages. In addition, PATH provided training on applying the guidelines and using descriptive, analytical, and prognostic epidemiology methods at all target sites to monitor and evaluate programs. PATH also developed checklists for field monitoring and supervision that address each program component. These checklists are in the field-testing stage, and PATH expects them to be introduced nationally in March 2007.

Initiated the introduction of model approaches for information system coordination and integration between the TB and HIV programs. To ensure that TB/HIV co-infection surveillance eventually can be linked, and to improve referral systems among facilities, PATH introduced an addition to the TB-01 Form (where TB risk factors are listed) to include the HIV status of the patient. Existing AIDS legislation in Ukraine requires that all data regarding a patient's HIV status be kept confidential. Therefore, the DRRS Forms Revision Discussion Group decided that this attachment to the TB-01 Form should not include personal identifiers but rather use a numeric code. The form, with the attachment, has been approved by local health authorities of Donetsk and Kharkivska Oblasts and Sevastopol City and is now being used by TB health facility staff. In addition, content on the impact of HIV on TB was added to the MIS training curriculum. In part due to this preliminary work, PATH recently received funds from the USAID Regional Mission through TASC2 to specifically address TB/HIV program integration in Donetsk and Dnipropetrovska Oblasts over the next two years.

Incorporated data on drug susceptibility into the revised TB DRRS. The DRRS forms now include indicators related to drug susceptibility data management. These include referral information, laboratory registry information, and drug resistance monitoring and results.

Integrated a pharmaceutical management component into the TB DRRS. The form dedicated to case management now includes a section on drug management, which allows MIS analysts to monitor drug consumption by type. The overall TB drug management system, however, still needs to be strengthened.

Factors affecting achievement

Data forms and definitions are still not finalized. The adaptation to internationally recommended definitions and forms has been slow due to requirements from specialists to include a large quantity of additional data. The absence of a national policy and guidelines for TB control that

give priority to detection and cure of infectious cases, and the lack of national capacity to make a rapid and effective decision on necessary data, have also hindered the process. Outstanding concerns include case definition at registration and treatment process monitoring and outcomes. In addition, some widely used indicators are not consistent with modern international concepts. For example, TB prevalence in Ukraine is defined as cumulative cases known (active or cured), rather than active cases existing in the community.

Shortages of staff to conduct program monitoring. Despite training, most managers at the oblast level are not using data consistently to identify program management strengths and weaknesses. A key issue is the lack of staff able to visit rayons and monitor the process and quality of the data collection and entry process, assist with analyses, and develop action plans based on findings.

Absence of an NTP managerial team. Although the government has endorsed the creation of an NTP, and an NTP manager has been assigned, MOH management and monitoring of TB activities is poor because of lack of resources, funding, and expertise in monitoring and evaluation. PATH is currently working with the NTP manager to develop terms of reference for an NTP managerial team that would include at least five monitoring and evaluation specialists at the national level. PATH is also recommending that within the oblast-level NTP structure, at least three specialists (laboratory, statistics, and clinical) are included.

Suspension of the World Bank TB project. As noted earlier, the electronic monitoring system could not be implemented at all rayon levels because the World Bank program did not succeed in procuring the necessary information technology equipment, as expected.

Lack of trained specialists and advanced age of MIS staff at all administrative levels. Many rayon-level TB dispensaries have no statisticians employed, so the project turned to clinical staff to take on monitoring and evaluation functions. Further, turnover of trained personnel is high, as specialists are retiring.

Parallel registration and reporting system. MIS staff at the rayon level are overloaded with many obsolete reporting requirements, in addition to the new system. For example, oblasts are still required to report on indicators such as mass screening coverage (both by X-ray and skin test) and closure of lung cavities.

Main successes and lessons learned, application of lessons learned to future activities, and potential for scale-up

The TB monitoring and evaluation system in Ukraine is increasingly relying on a sound evidence base to assess the epidemic and to manage the program. While more progress is needed, significant inroads have been made in instituting a TB monitoring and evaluation system that is largely consistent with international indicators and standards. In addition, changes in the process of administering treatment and in definitions regarding treatment outcomes, for example, led to re-evaluation of infection control procedures, which populations should be prioritized for active case finding, and what additional support could be provided to encourage treatment completion, among others.

Involvement of national-level stakeholders is essential, as is stimulation of interest at the regional and local levels. Although it was extremely challenging at times to work with national-level TB authorities, PATH's efforts to implement new policies and practices at the oblast level could not have succeeded in the long term without their eventual buy-in. Because health policy, generally, is established by and emanates from the central government through ministerial orders, oblast-level stakeholders needed assurances that central authorities were supportive lest they face negative consequences. At the same time, oblast authorities were often more readily accepting of new approaches and could sometimes serve as effective advocates for change at the national level.

Regional exchanges are extremely valuable. Regional exchange trips inside and outside of the country proved to be extremely effective in gaining support for DOTS implementation generally, and specifically for adopting international MIS standards. The visit to Kyrgyzstan, for example, was very successful in enabling Ukrainian authorities to understand first hand the benefits of moving from Soviet-era evaluation approaches to cohort analysis based on WHO norms.

Training curricula for graduate and post-graduate medical training must continue to be updated. To ensure sustainability, it will be essential to incorporate new curricula on TB management into pre-service and post-graduate medical training, including monitoring and evaluation of TB programming.

Monitoring and evaluation and supervision activities must be covered by the NTP budget in the future. At least seven percent—and preferably up to 15 percent—of the NTP budget should be allocated to monitoring and evaluation and supervision activities to ensure that the new system is enduring and useful.

QC of information is essential. One approach to controlling the quality of information regarding TB cases is to implement an individualized database (using case management cards and electronic case-by-case databases). This will reduce opportunities to manipulate information regarding key indicators (e.g., case fatality rates, incidence) when data are aggregated, which will ensure the most accurate data possible.

Electronic tools are useless if a paper-based system is not used properly or well-understood. For an electronic system to be effective, it is vital that a paper-based system be introduced, used, and well-understood first, before computerization is introduced. For staff with limited or no experience with computerized systems, this approach enables them to understand the rationale behind the system as well as the utility of the indicators for program management.

Objective 4: Reduce diagnostic delay, increase case detection, and improve adherence to TB treatment by stimulating timely and appropriate health-seeking behavior for TB symptoms; implementing specific community mobilization strategies; increasing awareness and understanding of TB transmission, symptoms, treatment, and cure among the general public, as well as among specific populations at risk; and introducing culturally sensitive treatment support strategies for TB patients and their families.³

³ As the project did not undertake specific “patient delay” studies, it is not possible to determine quantitatively whether the awareness-raising and educational interventions resulted in reduced diagnostic delay or increased case

As part of its ACSM strategy, PATH undertook two mutually reinforcing sets of activities to achieve this objective. One set of activities focused on awareness-raising and educational efforts with the general public as well as with specific at-risk populations. The other focused on identifying appropriate treatment support strategies for TB patients and their families. These are described below.

Results and outcomes

Continued high levels of TB awareness and understanding of TB transmission, symptoms, treatment, and cure among the general public and specific at-risk populations in the target regions. During the course of the project, PATH undertook a series of activities to increase TB awareness among the public, as well as among particular populations, such as low-income and homeless individuals and people living with HIV (PLHIV). PATH conducted formative research with these populations, as well as with current TB patients, to assess their needs and current understanding regarding TB transmission, symptoms, and accessibility of care. Specifically, the following steps were taken:

- Baseline and follow-up knowledge, attitudes, and practices (KAP) surveys. To assess public awareness of TB transmission, symptoms, and need for early diagnosis and treatment, PATH project staff designed a baseline and follow-up KAP survey that was administered to a sample of the general public, as well as to specific social groups, in Kyiv City and Donetska Oblast. The baseline survey was administered in February 2004 to a total of 1,600 individuals from the general public (600 from Kyiv City and 1,000 from Donetska Oblast), 60 open market vendors in Kyiv City, and 50 clients of food banks in each of the two locations. The follow-up KAP survey was conducted in August 2006 among 1,600 representatives of the general public in both locations, 60 open market vendors in each of the 2 locations, and 50 clients of food banks in Kyiv City only. Selected results are provided below, and a more detailed summary is available in Attachment B.
- Focus group discussions (FGDs) with PLHIV. Five FGDs with PLHIV were conducted in early 2004 (three in Kyiv City, one in Mariupol', and one in Makiyivka) to better understand the factors that influence health care-seeking behavior when TB may be suspected. A full report is available upon request.
- Development and roll-out of a comprehensive BCC strategy for TB control in target regions. In Fall 2004, based on the formative research results, PATH finalized its BCC strategy, which guided activities in all target sites for the duration of the project. In late 2004, PATH, in collaboration with KNCV, also developed a complementary strategy specifically targeting homeless populations in Kyiv City, which was initiated in March 2005.
- Development and distribution of educational material. Based on the KAP survey results, PATH reviewed existing information, education, and communication (IEC) materials for the public and developed new designs for a poster, a tri-fold brochure, and a 16-page brochure for the general public, as well as a 24-page booklet for TB patients and their families. Beginning in October 2004, PATH BCC specialists conducted a series of training workshops

detection. Such studies were beyond available resources. However, KNCV did undertake a patient delay study in Kyiv City that was informative, and follow-up knowledge, attitudes, and practices survey results suggest that, in general, there were positive changes in awareness of TB and intention to seek care if TB symptoms were present.

on IEC message and materials development for health education and medical specialists in Donetska Oblast and Kyiv City. The goal of these workshops was to increase local capacity to develop and maintain public information dissemination. Specifically, participants were trained in the use of formative research to develop an IEC strategy and to design, pretest, produce, and disseminate key materials and messages. Subsequently, PATH organized numerous rounds of pretesting for these materials, which were reviewed and approved by TB specialists in Donetska Oblast and Kyiv City before being finalized. By the end of the project, approximately 1.5 million copies of materials had been disseminated to the general population, medical providers, and TB patients and their families throughout the five target regions. In addition, the URCS, through its oblast chapters, distributed 150,000 copies of materials to at-risk populations in the target regions.

- Expansion of mass media efforts. One television spot and two radio spots were developed and aired at the oblast and district levels in all target regions by 2006. Media efforts were intensified during the periods preceding and following World TB Day in both 2005 and 2006 (March 1 and September 1). In total, the television and radio spots were aired more than 1,500 times during these periods.
- Establishment of a hotline. In collaboration with the URCS's chapter in Kyiv City, the project established a TB hotline. PATH trained two URCS employees to respond to calls. Currently, the hotline receives approximately 30 calls per month.
- Training of journalists. Media training workshops for journalists were convened prior to World TB Day in both 2005 and 2006. A total of 27 journalists from Donetska Oblast and 23 from Kyiv City participated. Key messages focused on signs and symptoms of TB and the availability of services.

It is important to note that the baseline KAP survey results suggested that the proportions of the general population and sub-populations that knew key facts about TB were already quite high. For instance, 90 percent of the general public sampled knew that TB was transmitted by air, as did 78 percent of open market vendors, and 81 percent of food bank clients. Therefore, it was not expected that large changes would be seen. In general, small positive changes in TB awareness were seen over the project period, but there were no statistically significant changes.

Regarding questions on health-seeking behavior, the results were mixed and may have reflected ongoing misunderstandings that TB treatment and diagnosis are expensive, or anomalies in the results because of small sub-sample sizes. For example, among open market vendors, the proportion of respondents who would go to the doctor as soon as they realize that their symptoms could be related to TB decreased from 89 percent in 2004 to 49 percent in 2006. This same group thought that TB diagnosis (7 percent in 2004 versus 40 percent in 2006) and treatment (10 percent versus 50 percent) was expensive and unaffordable to them. The reasons for these changes in perception of cost are unclear.

According to the respondents, prisoners, the poor, and homeless people are more likely to be infected with TB than the general public. On the question of how respondents felt about people with TB, very little change was seen between 2004 and 2006: only about 35 percent of the general public sampled said that they felt "compassion and a desire to help" people with TB.

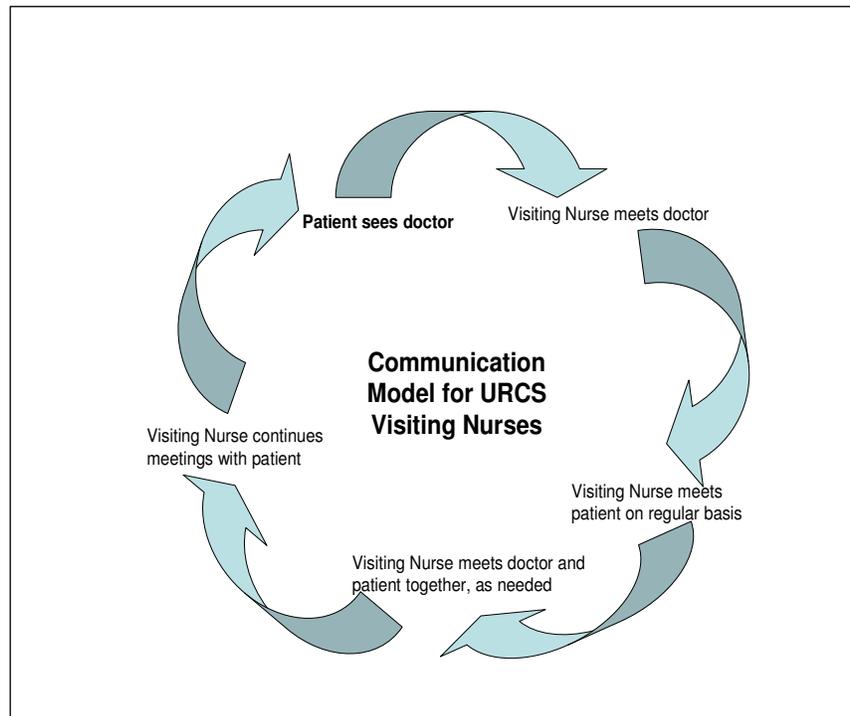
Overall, these data, combined with the results from the exit interviews and FGDs, suggest that awareness of TB and its symptoms may not be the most important factor influencing the decision to seek timely care. Other factors, such as the quality of interactions with providers, the perceived cost of service, and the stigma associated with TB may have greater influence.

Decreased treatment default due to development and roll-out of a patient support strategy in selected target regions. In close consultation with local partners and based on the formative research data, PATH developed model strategies for specific at-risk populations and TB patients in Kyiv City and Donetska Oblast to enhance support and facilitate ambulatory treatment completion. Key activities included the following:

- Outreach to at-risk populations. PATH and its partners made concerted efforts first to understand the key factors that may affect early detection and treatment success among at-risk populations, and then to develop specific strategies to reach socially marginalized groups such as newly released prisoners, the homeless, PLHIV, and those engaged in substance abuse. For example, during the last quarter of 2004, KNCV and PATH reviewed the roles of existing organizations working with the homeless (NGOs and public service) in Kyiv City, convening a roundtable meeting that resulted in a clear picture of existing social services to which the project could link and refer patients. In addition, PATH developed subcontracts with the Kyiv City and Donetska Oblast Committees of the URCS. The URCS was selected because the basic direction of its activities includes medical and social support to socially vulnerable people, a visiting nurses service for elderly people living alone, a network of Red Cross centers providing medical and social support, and information dissemination on various medical problems. As outlined in the resulting work plan, PATH conducted TOT workshops with URCS personnel on effective TB communication. The main goal of this work was to improve the counseling skills of visiting nurses and volunteers to decrease the stigma toward TB patients, provide correct information on TB, and encourage adherence to TB treatment among at-risk populations. In June 2005, Dr. Alla Khabarova, Executive Director of the URCS Central Committee, asked PATH to conduct the same training for URCS project coordinators from other oblasts of Ukraine, at their expense.
- Establishment of directly observed therapy (DOT) through the URCS Visiting Nurses Service. In May 2005, PATH developed a model for involving the URCS Visiting Nurses Service in Kyiv City and Donetska Oblast (Mariupol', Yenakievo, Horlivka) to carry out directly observed therapy of TB patients during the continuation phase. The main goals of this work were to determine the needs of TB patients during ambulatory care and to develop effective methods of collaboration between local NGOs and medical facilities involved in TB care and support. The model was then expanded to Dnipropetrovska and Kharkivska Oblasts in early 2006. In all oblasts involved in the program, the URCS and PATH developed cooperative agreements with TB dispensaries and helped create volunteer working groups that included patients, to create social support models for TB patients that would work best in their settings. In addition, rayon coordinators were assigned to assist in identifying linkages with social services and monitoring the program. A model system of communication that ensures the visiting nurse consults with the specialist before meeting the patient also has been established. This enables the nurse to obtain medical information before meeting the patient and allows for a regular feedback loop that includes the doctor, nurse, and patient (see Figure 1 on the following page).

Nurses may observe treatment in the patients’ homes, in medical and social support rooms of the Red Cross Committee, or in other settings, agreed upon with the patient. In total, 107 visiting nurses have now been trained in the 4 oblasts, and more than 1,200 patients have been supported by the nurses. In all sites, the visiting nurses and rayon coordinators convene weekly meetings to share experiences and information. Each TB patient has a “client card” that documents treatment adherence. In many cases, either the oblast health administration or the URCS itself provides other forms of social support—not funded by the CSHGP project—such as food packages, clothes and footwear, toiletries, and hot meals. In addition, in all sites, the URCS has been instrumental in disseminating informational materials to patients, their families, and community groups.

Figure 1. Communication model for the URCS Visiting Nurses Service.

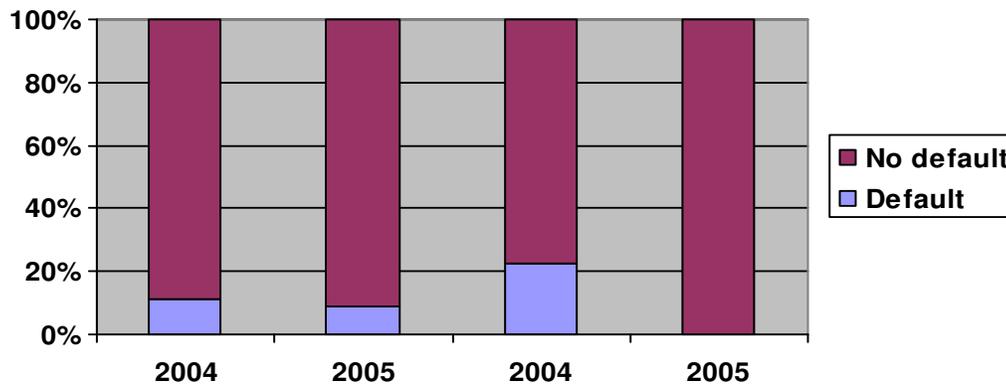


- The example of Donetsk Oblast. By the end of the project period, 42 nurses had been trained in eight cities in Donetsk Oblast: Mariupol’, Dobtropolye, Snizhne, Horlivka, Yenakievo, Kramators’k, Makiyivka, and Dzerzhinsk. The model was first piloted in Mariupol’, Yenakievo, and Horlivka; therefore, the potential impact of the activities on TB control can be assessed in these cities, whereas it is still too early to estimate impact in the other sites. In all cities, the URCS has organized special seminars and information sessions on TB for local social service organizations that serve low-income and homeless populations. In addition, peer-to-peer programs have been established.

Although it is still early to determine the impact of the URCS intervention on treatment completion, preliminary cohort data from the three pilot cities where the program has been active for more than 1.5 years, suggest that the likelihood of treatment default is substantially lower in the intervention cities than in the rest of the oblast. The graph below compares data

from Mariupol' and Yenakievo to the rest of Donetsk Oblast. As indicated, before the intervention, the probability of defaulting in Mariupol' and Yenakievo was higher than in the rest of the oblast. After the intervention, the probability of defaulting was substantially lower. While these data are based on rather small sample sizes, they are nonetheless encouraging (see Figure 2).

Figure 2. Effect of the URCS visiting nurse intervention on treatment default rates in Mariupol' and Enakievo, Donetsk Oblast, 2005.



Factors affecting achievement

It is important to recognize that achieving positive behavior change across disparate groups and geographic locations is extremely challenging and, in any case, requires long-term, sustained, and often intensive intervention and investment. Given these constraints, PATH is pleased with the results of its efforts to date and also recognizes that much more needs to be done. Overall, the main factors affecting achievement include the following:

- **Timing.** It was extremely important that activities to increase public awareness and mobilize specific populations did not precede the readiness of TB and PHC services to respond appropriately. This was less a concern in Kyiv City and Donetsk Oblast where WHO and KNCV, in addition to PATH, have been working to scale up DOTS since 2001. In Kharkivska and Dnipropetrovska Oblasts and Sevastopol City, however, DOTS expansion started later; therefore, it was not possible to assess the impact of ACSM activities on increases in detection or reductions in default.
- **Political support.** Where the program had strong political support, such as in Donetsk Oblast—and specifically in the cities of Mariupol', Yenakievo, and Horlivka—significant progress was made in establishing effective and sustainable mechanisms for supporting patients through treatment. This is evidenced by the budgetary allocation that the Donetsk Oblast Health Administration made, for example, to provide food support to indigent TB patients.
- **Prevailing stigma.** PATH's formative research suggests that strong stigma is associated with TB, as it is widely believed to affect only those who live in poverty, abuse alcohol, are imprisoned, or are unemployed. More recently, stigma has also become associated with HIV infection. It is therefore difficult for many in the general public to accept their own potential

vulnerability to TB, which likely contributes to late presentation of symptomatic individuals to health care services.

- Longstanding reputation of TB services. Unfortunately, TB services have long been regarded by the public as rather poor and undesirable, both as a profession and as a place to seek care. It is therefore challenging to encourage people to overcome their reluctance to seek care at TB dispensaries. Modernization of TB facilities is proceeding very slowly due to lack of funds. Further, salaries of doctors and nurses are extremely low, resulting in low morale of staff. Monitoring and evaluation is still weak in many cases, and the political debate regarding implementation of the DOTS strategy, especially as portrayed in the media, also contributes to the negative reputation of TB services.
- Cost of mass media advertising. The cost of mass media “social advertising” remains very expensive. Ukraine does not have established regulations or policies regarding preferential pricing for social messages, making it impossible to carry out long-term campaigns.
- Public distrust of advertising. Due to abuses in the use of advertising, especially by politicians during recent elections, the Ukrainian public, in general, tends to distrust mass media messages, regardless of the content.
- Difficulty accessing hard-to-reach populations. At all levels of the health care system, there are no clear strategies for accessing socially marginalized populations. On the contrary, existing policies and practices tend to drive people away from services, reinforcing stigma and discrimination against key populations and taking punitive actions against those who do present themselves. As a result, those who may need care the most are often the least likely to seek it out.
- Absence of a clear government policy on TB control. Although significant progress has been made in the adoption of the DOTS strategy in Ukraine, a clear and unified policy has still not been disseminated to all oblasts. Most ministerial orders regulating changes in practice are unknown to medical personnel at the oblast and rayon levels. This situation makes it difficult to effect positive changes in behavior among medical providers, which, in turn, affects the degree to which those in need of care are willing to change their behaviors.
- Limitations of baseline and follow-up data. Although broadly useful—and even encouraging—the data from the KAP surveys, exit interviews, and FGDs are limited to the extent that clear trends and conclusions cannot be made regarding sub-populations due to small sample sizes. For example, to further evaluate the reliability and validity of the apparent drop among open market vendors in their willingness to seek care when TB symptoms are suspected, a more focused survey with adequate sample sizes would need to be conducted.

Main successes and lessons learned, application of lessons learned to future activities, and potential for scale-up

Successful and sustainable interventions to support TB treatment adherence can be implemented in Ukraine using existing community institutions and resources. While it is critical to modernize the formal TB control structures, this effort can be augmented by using existing resources, such as the URCS visiting nurse program, to build effective models of collaboration between medical providers and social institutes and benefit people with TB. This project resulted in creation of a

cadre of trained volunteers, as well as increased community involvement and commitment to address problems related to TB at the local level. The URCS has been extremely committed to its participation in this program and has shown that in many places, funds can be raised from local government and community sources to continue providing social support to TB clients.

Default rates can be decreased through a patient-oriented approach to care. PATH's efforts to improve communication and counseling skills and provide social support, with the goal of improving quality of care, and in particular, reducing treatment default among socially disadvantaged populations, has been successful in areas where default rates previously were quite high.

In DOTS implementation in a high-TB-awareness environment, paying greater attention to specific ACSM components can yield more positive results than general IEC campaigns. In Ukraine, where general TB awareness is already high, focusing on improved services, better counseling and support to patients and their families, and social mobilization to support socially disadvantaged populations to seek care and complete treatment rather than on intensive but general IEC campaigns is likely more effective and more cost-effective. Results of PATH's KAP surveys show that there are still specific populations that continue to have particular misunderstandings about TB disease and treatment (e.g., treatment cost). Future work should refine messages and target populations to yield the highest benefit for the effort.

Stable behavior change in Ukraine needs more time and depends on growing trust in the medical system. This process will take a number of years. As the social support intervention is expanded, more attention must be paid to developing a system for monitoring and supervision to ensure consistent quality of counseling and informational support to clients.

Potential for scale-up is high. As with all other components, plans to scale up the behavior change strategies are already underway in the existing and new target sites. In all sites, greater attention will be paid to the social mobilization and community support model than to IEC activities per se. Existing materials, especially for patients and their families, will continue to be reprinted and disseminated, however. Curricula have been developed and finalized, and a cadre of trained trainers from the URCS is prepared to extend training to new locations. With financial support now secured from several oblast health administrations, current social support activities of the URCS will continue.

Objective 5: Improve provider practices by strengthening provider capacity to diagnose and treat TB based on DOTS, improving systems to support appropriate referral of TB cases, and enhancing knowledge of and response to TB/HIV interaction, with emphasis on appropriate counseling and client-provider interaction with emerging populations at risk.

Results and outcomes

PATH's efforts to improve provider practices focused on three main areas: clinical training to improve the capacity of health care professionals in the target regions to diagnose and treat TB disease based on the DOTS strategy; developing improved systems for referral of TB patients from the general health system to and from specialized TB services, as well as HIV-related

services; and training in counseling and communication to improve both patient experiences and provider satisfaction at the facility level.

Strengthened providers' clinical skills to diagnose and treat TB disease appropriately and to effectively refer patients in all target sites. For this effort, PATH collaborated closely with the WHO TB project team in Ukraine to ensure synergy and consistency in all target sites. In addition, PATH undertook in-depth interviews with key TB stakeholders to gather feedback on clinical training needs. PATH's clinical training consultant, Dr. Oleksandr Klochkov, then led the review and modification of the WHO TB curriculum, engaging key partners in a number of roundtables and other meetings to gain consensus. In addition, the CORE TB Working Group TB training modules were reviewed and adapted for Ukraine and incorporated into the curriculum. In May 2005, the DOTS Training Curriculum and DOTS Training Modules/Guidelines for PHC personnel were finalized.

Regional trainings were initiated in June 2005 and continued through September 2006. By the end of the project period, PATH had trained a total of 1,651 PHC providers in Kharkivska Oblast, Sevastopol City, and Dnipropetrovska Oblast. To facilitate roll-out of the training, PATH prepared a cadre of 27 local trainers, who have been supervised by PATH staff and consultants. Pre- and post-test knowledge and satisfaction questionnaires were administered at all trainings, with results suggesting good knowledge retention and high acceptance of the training methodology and content.

When clinical trainings were first initiated, PATH decided to structure the training workshops differently for specialists and general health personnel to ensure practical relevance for each group of "trainees." For GHC providers, the curriculum allowed for more time and attention on diagnosis and referral, and on establishing an ambulatory system of TB treatment. Trainings for TB specialists concentrated more heavily on diagnostics and DOTS treatment questions. For all trainings, PATH used an interactive methodology, which was quite novel for many participants.

To ensure sustainability, PATH also initiated collaboration with pre- and post-graduate medical education institutions in the target regions and at the national level. Curricula are currently being adopted by the Department of Phthisiology at the Donetsk State Medical University to strengthen pre- and in-service training on clinical management of TB based on the DOTS strategy. To support retention of knowledge, PATH also developed and disseminated 120,000 tri-fold "job aids" for GHC providers (doctors and nurses) on the DOTS-based algorithm for TB diagnosis. In addition, all trainees received copies of the WHO training modules for their reference.

Improved counseling and communication skills among TB specialists. As noted earlier, formative research at the start of the project suggested that the quality of interaction between patients and medical personnel in TB facilities may hinder timely diagnosis and continuation of treatment. In particular, baseline and follow-up exit interviews were undertaken with TB patients. PATH project staff designed an exit questionnaire for patients leaving TB facilities to evaluate satisfaction with their interactions with health care personnel. The goal of the questionnaire was to collect baseline data on aspects of provider performance that could be improved through communication and counseling training and to measure changes in provider performance by administering the same questionnaire at the end of the project. A total of 312 men (61 percent of the total) and women (39 percent) were interviewed for the baseline and final questionnaires.

The baseline sample included 164 patients from 9 facilities in Donetsk Oblast and 148 from 2 facilities in Kyiv City. The final sample included 201 patients from 4 facilities in Donetska Oblast and 111 from 2 facilities in Kyiv City.

Based on these findings, as well as on interviews with providers themselves, PATH developed and finalized a training curriculum specifically aimed at TB specialists that focused on strengthening interpersonal communication and counseling (IPC/C) skills. Special attention was paid to improving interactions with socially disadvantaged and marginalized populations, in an effort to reduce stigmatizing attitudes and discriminatory behavior. Table 5 shows the communication training that had been accomplished by the end of the project.

Table 5. Communication trainings for TB specialists during the project period.

Region	Number of trainings	Number of trainees
Kyiv City	6	86
Donetska Oblast	12	152
Dnipropetrovska Oblast	3	55
Kharkivska Oblast	3	47
Sevastopol City	1	18
TOTAL	25	358

Analysis of the baseline and final exit interview data reflects a marked improvement in patient satisfaction with certain areas of provider IPC/C performance. Doctors' sensitivity to patients' concerns was greatly improved in the exit questionnaire at the end of the project (86 percent in 2006 versus 51 percent in 2004 who were "satisfied" or "very satisfied"). Since improved information sharing and counseling of options is considered essential to good client-provider interaction and was strongly emphasized during the training, interviewers asked respondents to evaluate the doctor's ability or willingness to explain information in language that they understood. At baseline, 51 percent of respondents said they were "satisfied" or "very satisfied;" this increased to 88 percent in the follow-up questionnaire. Dramatic improvement was also seen in response to the question regarding the doctor's ability or willingness to provide advice about how to inform family members about the patient's condition. Several other areas reflected stable or moderate improvement, such as doctors' willingness to make patients feel comfortable, and doctors' expressions of empathy.

Analysis of the exit interview data, in combination with other qualitative data, strongly suggests that investing in the training of medical providers can have an important positive impact on improving IPC/C performance, as well as on patient satisfaction. These factors likely contribute in turn to increased comprehension by patients of TB, their treatment needs, how to communicate with their family members, and ultimately, treatment success. A summary of the exit interview report is available in Attachment B.

Incorporating the IPC/C curriculum into Donetsk Medical University. Given the positive impact of the training on provider behavior, PATH has initiated discussions with Donetsk Medical University to incorporate the IPC/C curriculum into both their pre-service and post-graduate

education programs. This work continues with current funding and will be expanded to other oblasts.

Incorporated voluntary counseling and testing (VCT) skills into communication and counseling training for TB health professionals. In early 2006, PATH began to incorporate VCT training into the counseling and communication curriculum for TB specialists. As PATH has been working with the MOH and other key partners to develop a national VCT protocol, PATH could ensure that the approaches included in the training were consistent with national recommendations. As part of this training, participants are also educated about locally available resources for PLHIV. In addition, referral mechanisms between TB and HIV services are being explored. This work will accelerate in 2007 with new funding from the USAID Regional Mission through PATH's TASC2 TB Country Support Task Order.

Factors affecting achievement

Many of the factors that affected achievement are similar to those cited under Objective 4. Specifically, the following factors affected achievement:

- Political support for new clinical practices. As noted in the previous section, although significant progress has been made in the adoption of the DOTS strategy in Ukraine, a clear and unified policy has still not been disseminated to all oblasts. Most ministerial orders regulating changes in practice are unknown to medical personnel at the oblast and rayon levels. This creates a barrier to adoption of new clinical skills and protocols among providers.
- Perception of priority. In terms of the communication training, where the concept had strong political support, such as in certain cities of Donetsk Oblast, coverage of specialists was welcomed, with doctors from various TB facilities requesting that their staff have access to the training. When such training was perceived to be of little use or a lower priority compared to clinical skills-building, it has taken longer to convince authorities of its worth. Significant progress has been made, however, with training now taking place in all target oblasts.
- Prevailing stigma. Again, PATH's formative research suggests that strong stigma is associated with TB, as it is widely believed to affect only those who live in poverty, abuse alcohol, are imprisoned, or are unemployed. More recently, it has also become associated with HIV infection. Stigmatizing views and discriminatory behavior are rife in the health care system and are no less among TB specialists. Altering these views is a long-term process.
- Underpaid and undervalued providers. Funding levels for health care are poor, keeping salaries low and facilities in disrepair. Low morale makes it difficult to effect sustainable changes in behavior among medical providers. An additional factor is that many TB providers have reached or are approaching retirement age, and many, at least initially, are not open to new ways of working.
- A slow and labor-intensive process. Because of the nature of this training and the need to persuade providers of its value by working intensively on an individual or small-group basis, the process is time-consuming and labor-intensive—and potentially expensive. Nevertheless, without important changes in the quality of interaction with patients, acceptance of services

will likely remain low, negatively affecting the country's ability to deal effectively with the TB epidemic.

Main successes and lessons learned, application of lessons learned to future activities, and potential for scale-up

A TOT model of DOTS training roll-out is effective, as long as good supervision and monitoring are available. PATH found it highly effective to train trainers and use a cascade-type approach to train larger numbers of providers, as long as support and feedback were provided to the initial set of trainees on an ongoing basis. After the initial TOT, PATH staff co-trained with new trainees until the desired level of training proficiency was reached. In subsequent trainings, PATH staff and the new trainers met together to prepare for the workshops. The new trainers, always in pairs, conducted the workshops. PATH staff observed every training, and provided written and verbal debriefings and coaching. Once trainers had achieved full competence, support and coaching by PATH staff became more intermittent.

Communication and counseling training can have a positive impact on provider behavior change. As evidenced by the exit interview results, communication training with health care workers—and specifically with TB specialists—appears to be valuable in improving the quality of patient-provider interaction, which in turn, may positively affect treatment completion rates.

For stable changes in client-provider communication, supervision also must include support and continuing education in this area. To ensure sustainability, the supervisory system should enable monitoring, evaluation, and on-going refresher training and support regarding IPC/C skills. PATH, in collaboration with local partners, recently introduced supervision tools in several sites to pilot this approach.

Potential for scale-up is high. PATH is continuing this intervention as part of its TB control work under TASC2 in all the target areas.

C. Results: cross-cutting approaches

1. Community mobilization

As noted under Objective 4, PATH's main community mobilization activities have been undertaken in collaboration with URCS chapters in the target oblasts. Specifically, as noted earlier, PATH has provided training to the URCS's visiting nurses to conduct outreach to vulnerable populations, observe treatment, and reduce treatment default. Data suggest a positive effect on reduction of default rates in the areas where the intervention has been taking place the longest. A key lesson learned has been the importance of using existing structures and services to mobilize communities and render support to TB patients. These organizations, especially in the post-Soviet environment, have important leverage with local government and are eager to reassert their relevance, receive updated information, and contribute to health improvements. PATH believes that the sustainability of this approach is possible because of these factors.

2. Communication for behavior change

As has been described, PATH sought to positively influence the behavior of the following populations: the general public, to recognize symptoms and seek timely care; socially

disadvantaged populations, to recognize symptoms, seek timely care, and adhere to treatment regimens; patients and families, to adhere to treatment regimens; and medical care providers, to employ new clinical protocols based on DOTS, improve counseling and communication skills, and recognize and avoid stigmatizing attitudes and discriminatory behavior toward patients or those perceived to be at high risk for TB or HIV. To ensure that the project achieved maximum effectiveness and ensured appropriateness of all activities, the following guiding principles were applied:

- Content and approaches are based on findings from the formative research.
- Development of communications activities is participatory, involving members of the target populations.
- Materials and BCC activities are participatory, involving relevant international and local partners to enrich the quality of those materials and activities and avoid duplication.
- Messages and materials are pretested and revised prior to use.
- Curricula and other capacity-building materials are developed taking into account data from the baseline data and cultural characteristics.
- All messages, materials, and BCC activities are planned and articulated in light of Ukrainian social and cultural norms.
- The BCC strategy was planned and articulated in accordance with the goals of the NTP in Ukraine.
- Activities and materials are monitored and evaluated.

As evidenced by the final evaluation results described in previous sections, the project achieved significant success in meeting its objectives with the key target populations. Nevertheless, ongoing support especially to socially disadvantaged populations, patients and their families, and health care workers will be essential to sustained change. In the short term, PATH will be able to work with local partners to provide some of this support through its ongoing USAID funding; in the long term, local health education centers, social service organizations such as the URCS, and health facilities themselves will need to take a lead role in providing support.

3. Capacity-building approach

Strengthening the grantee organization

PATH's local TB Team members have significantly strengthened their expertise and management skills to effectively implement the program. All program specialists have had the opportunity to participate in national and regional conferences and training courses to enhance their knowledge and skills. During the last year, PATH's role in supporting the government to strengthen its NTP has become more prominent, as evidenced by PATH's increasing involvement in key working groups and consultations. PATH clearly is viewed as a key technical resource on TB in the country and region. Further evidence includes its participation in the planning of the NTP assessment and its role as the international NGO constituent representative on the National TB Coordination Group. PATH's technical teams routinely receive positive feedback on project activities, including training courses, materials, roundtables, and strategic input to the MOH.

Key to capacity-building was the strategic involvement of international technical consultants to advise the PATH team on project strategy, evaluate technical rigor, and enhance relationships with technical and political counterparts within the Ukrainian government and among partners. Dr. Fabio Luelmo, in particular, provided instrumental support in critiquing activities, both formally as the team leader for both the mid-term and final evaluations and as part of technical support visits. His involvement was essential, as well, to gaining support for an NTP review, conducted in February 2006, and the development of NTP draft guidelines. Other consultants included Dr. Richard Urbanczik and Ms. Carolyn Wallis, on establishing and maintaining laboratory QC procedures in both PHC and TB facility laboratories; and Dr. Ivan Solovic, on clinical training and TB case management, especially of PHC providers. Dr. Solovic also participated in the NTP review and hosted a delegation of Ukrainian specialists in Slovakia.

Strengthening local partner organizations, health facilities, and health worker performance

The primary participants in PATH's capacity-building activities included the network of TB laboratories and clinical facilities specializing in TB, GHC laboratories and polyclinics, health education centers, and URCS chapters in the target oblasts. PATH has seen tremendous progress toward building capacity among all participants across all key objectives, as evidenced by activities described in the previous sections. For example, laboratory capacity has been dramatically improved due to the project's training on internal QC for smear microscopy, introduction of EQA using panel testing, and improved safety procedures and laboratory organization. Trained laboratory specialists from early pilot regions are now providing training to their counterparts in other regions. Strengthening sputum microscopy at general polyclinics also has improved access to diagnosis. Similarly, TB specialist clinical skills are being enhanced through clinical training in the new pilot oblasts. Strengthening MOH capacity at the central level is more challenging, given the political instability and frequent turnover of ministers and deputies. Nevertheless, PATH has provided consistent support for strategic planning, realignment of TB program goals and objectives, knowledge enhancement by facilitating working groups and consultations, and improving access to up-to-date information and literature on international TB control standards. Finally, significant progress in IPC/C skills among TB specialists has been made.

Training

Descriptions of specific trainings PATH has conducted over the course of the project are provided in previous sections. In the past three years, the project has trained almost 2,800 individuals, including:

- More than 350 TB specialists in effective communication and VCT.
- Approximately 1,650 TB specialists and general health doctors in DOTS implementation and clinical care of TB patients.
- More than 500 laboratory specialists in QC of sputum smear microscopy.
- More than 150 TB statistics specialists in data entry and analysis using the new electronic DRRS for TB cases.

- Approximately 107 URCS visiting nurses in treatment adherence and social support for TB patients.

4. Sustainability strategy

This project has sought to advance the adoption of DOTS in Ukraine, which has long been resistant to changing the TB control policies and practices first promoted during Soviet times. PATH's main strategy has been to support oblast and city TB control programs as a method of demonstrating the feasibility and appropriateness of the DOTS strategy, as well as supporting national-government adoption of effective TB control policies and guidelines. PATH also has forged important collaborative relationships with other key groups working to improve TB control, such as WHO, KNCV and KIT, and the World Bank, so that collective efforts might speed the advance of DOTS acceptance at the national level, as well as accelerate implementation in the regions. As a result, through comprehensive and mutually reinforcing efforts addressing all components of a successful TB control strategy, PATH has made important progress in facilitating change, both at national and oblast levels. Specific approaches to ensure sustainable progress have included involving key TB and health decision-makers in debate and dialogue by establishing working groups, convening technical symposia, organizing study visits to neighboring countries, increasing access to international technical literature and conferences, and supporting a review of the national program involving both national and international experts. At the oblast and rayon levels, PATH has worked with providers themselves to develop new clinical, communication, and counseling skills. Consequently, many of these medical personnel have begun to demand change at the central level. While it has been a difficult process at times, the MOH has now endorsed DOTS for national roll-out, an NTP is being created, and detailed TB control guidelines that are consistent with international norms are being developed and approved.

The success of these efforts can be attributed, in part, to PATH's commitment to working with existing MOH leadership and structures across all project objectives, since the strengthening of political will in favor of DOTS is perhaps the most important element for ensuring maximum sustainability over time. In addition, nearly all Ukrainians seek health care through government facilities. For these reasons, PATH focused intensively—and in the last year of the program, in collaboration with the Constella Futures Group's HPI—to encourage reform of the fundamental national- and oblast-level legislative base in support of DOTS. In addition, PATH has sought to prepare local trainers in all technical areas so that local capacity will continue to be available after the project has ended. Examples of local ownership and investment include Donetska Oblast's commitment to supply food packages and hygiene kits to low-income TB patients. This is important, as the project specifically decided against supplying such support due to sustainability concerns. Finally, PATH is closely collaborating with KMAPE and the Kharkiv Medical Academy of Post-Graduate Education to adopt DOTS-related curricula, as these institutions are used by the MOH to systematically organize post-graduate courses for doctors, nurses, and medical laboratory staff.

It is important to note that the USAID Regional Mission has recognized the importance of longer-term support to Ukraine to successfully adopt the DOTS strategy. The Mission has made additional investments in the program—US\$1 million in 2005 through CSHGP and an additional US\$1 million through TASC2 for fiscal years 2006 and 2007. Further investment through fiscal

year 2008 is possible. Given this situation, “phase-out” plans per se have not yet been developed—although, as described, each activity has been designed with maximum sustainability in mind.

D. Results

Although it is still early to evaluate the impact of the project on the performance of Ukraine’s NTP, available standard indicator data from cohort analyses in project regions are reported in Table 6. It is difficult to identify trends based on the available data for several reasons, and numbers presented in the table should be interpreted with caution. At baseline, in particular, Ukrainian definitions were not always consistent with international standard definitions, so it is not possible to compare baseline results with cohort data collected since the project began. This continues for some indicators so that parallel data collection using different data definitions still exists in some project areas. For instance, the Ukrainian definition for TB cure requires complete resolution of chest x-ray abnormalities (the closing of cavities), as opposed to the international definition of a documented negative sputum smear result at the end of treatment. In addition, misinterpretations and lack of QC in data collection pose challenges for analysis of these interim project results.

In Table 6, several indicators appear to have deteriorated since project start. There are a number of possible explanations. First, the data may be accurate and reflect a true decline in outcomes. This is regarded as unlikely, although in areas such as Donetsk Oblast, it is assumed that TB/HIV co-infection and MDR TB may be having an increasing negative impact on treatment outcomes. Work is currently underway by PATH, WHO, and partners to try to quantify the extent of these problems and address them. Second, the data may reflect improved accuracy and quality of data collection and use of standardized definitions, which could account for some of the variation in results. As the project continues beyond this year, PATH will continue to collect and analyze cohort data, which should provide a more reliable and valid assessment of overall progress in TB control in the project areas. In expansion oblasts, PATH has only started cohort analysis recently and does not have a full year of data; and therefore, data on cure rates are not available for these areas.

With regard to case detection rates, it should be noted that estimates for oblast case detection rates were difficult to project. PATH has made an attempt to come up with a reasonable approximation of the case detection rates for smear-positive cases for areas where it has been working. This is a rough estimate based on the WHO estimated smear-positive cases for Ukraine and the likely percentage of the estimated case burden represented by individual oblasts. The overall case detection rate for all forms of TB is likely to be higher, because there is probably some over-diagnosis of TB through mass screening with mini-fluorography and tuberculin skin testing of all children. Overall case detection, therefore, is likely to exceed 70 percent. Regardless of challenges with case detection estimation, however, all oblasts show indications of improvements in detection of smear-positive cases.

Table 6. Project results using standard TB indicators.

Indicator	Target area	Baseline data (year)	Final data (year)
Section I			
Treatment success rate	Donetska Oblast	64.9% (2003)	72.2% (2005)
	Kyiv City	45% (2003)	40% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	45% (2005)
	Sevastopol City	No comparable data available	32% (2005)
Case detection rate for smear-positive cases	Donetska Oblast	59.7% (2003)	62.6% (2005)
	Kyiv City	56.3% (2003)	59.6% (2005)
	Dnipropetrovksa Oblast	60.3% (2003)	62.6% (2005)
	Kharkivska Oblast	59.4% (2003)	62.1% (2005)
	Sevastopol City	57.1% (2003)	60.8% (2005)
Section II			
Cure rate	Donetska Oblast	53.3% (2003)	68.4% (2005)
	Kyiv City	34.7% (2003)	32% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	45% (2005)
	Sevastopol City	No comparable data available	28% (2005)
Completion rate	Donetska Oblast	11.6% (2003)	3.8% (2005)
	Kyiv City	10.2% (2003)	7.8% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	0% (2005)
	Sevastopol City	No comparable data available	4% (2005)
Death rate	Donetska Oblast	9.6% (2003)	9.3% (2005)
	Kyiv City	10.2% (2003)	11.1% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	21% (2005)
	Sevastopol City	No comparable data available	0% (2005)
Failure rate	Donetska Oblast	11.7% (2003)	10.1% (2005)
	Kyiv City	13.5% (2003)	26.8% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	7% (2005)
	Sevastopol City	No comparable data available	8% (2005)
Default rate	Donetska Oblast	11.1% (2003)	8% (2005)
	Kyiv City	23.7% (2003)	19.0% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	21% (2005)
	Sevastopol City	No comparable data available	56% (2005)
Transfer-out rate	Donetska Oblast	2.6% (2003)	0.4% (2005)
	Kyiv City	7.8% (2003)	3.3% (2004)
	Dnipropetrovksa Oblast	No comparable data available	Data not yet available
	Kharkivska Oblast	No comparable data available	6% (2005)
	Sevastopol City	No comparable data available	4% (2005)
Section III			
Proportion of population aware of at least two TB symptoms	Donetska Oblast	52% (2004)	64% (2006)
	Kyiv City	58% (2004)	57% (2006)
	Dnipropetrovksa Oblast	71% (2005)	Data not yet available
	Kharkivska Oblast	57% (2005)	Data not yet available
	Sevastopol City	67% (2005)	Data not yet available
Proportion of population aware that TB is a curable disease	Donetska Oblast	66% (2004)	72% (2006)
	Kyiv City	59% (2004)	62% (2006)
	Dnipropetrovksa Oblast	71% (2005)	Data not yet available
	Kharkivska Oblast	57% (2005)	Data not yet available
	Sevastopol City	67% (2005)	Data not yet available

III. Project management

A. Planning

As detailed in the DIP, the project planning process involved all relevant partners at the national and oblast levels from the outset. In particular, collaboration with oblast administration and health facility staff has resulted in strong commitments to the project at the oblast and rayon levels and a sense of ownership in project results. Collaboration with Ukrainian counterparts at the national level has been more challenging, consuming considerable time and effort as the project progressed. National-level work also was complicated by the unstable political situation—namely the Orange Revolution in November 2004 and the subsequent parliamentary elections in March 2006 that caused a government crisis for the following four months. During these periods, which could not have been anticipated during the drafting of the DIP, planned activities were temporarily suspended or slowed, while key MOH and other relevant governmental positions were left vacant or inactive. At this stage, however, relationships with national authorities are quite strong, with PATH clearly having made important strides in gaining the confidence of key partners. Despite delays due to the political situation, PATH was able to regain the ground lost during these periods, and overall progress toward achieving project objectives was not compromised. Annual stakeholders meetings were conducted throughout the term of the project, resulting in thorough discussion of and agreement on next steps. Nevertheless, the original DIP did not adequately account for the time and effort that would be required at the national level; therefore, it is recommended that future programs, particularly in the Europe and Eurasia regions, carefully consider the level of effort required to collaborate meaningfully with national authorities.

Communication and planning with international and local implementing partners, for the most part, has gone smoothly. One exception was the planning and coordination with the World Bank loan project. To maximize synergy among donors, PATH and WHO had committed to working in the same oblasts as those that were to be identified as priority regions by the World Bank. Unfortunately, delays in the Bank's identification of their target regions delayed PATH's choice of expansion oblasts for up to six months, in spite of repeated attempts by all partners to work with the World Bank team. Ultimately, both WHO and PATH proceeded to select expansion oblasts independent of the Bank's plans. Since the loan was eventually suspended, this proved to be an appropriate decision.

During year 3 of the project, the USAID Regional Mission provided funding to the Policy Project (managed by the Constella Futures Group) and then to the HPI, to further stimulate political support for DOTS at the national level. This required that the three main implementing partners on TB in Ukraine (PATH, WHO, and the Constella Futures Group) commit to regular planning meetings to ensure that each organization's respective activities were complementary and mutually reinforcing. This also required PATH to shift its policy development emphasis to the oblast level, although PATH remained involved in all national-level efforts as well. Again, at the time that the DIP was developed, PATH could not have predicted the extent to which other agencies would be supported to work on TB in Ukraine; however, the team quickly adjusted its scope of work to maximize synergy and collaboration with new players.

B. Staff training

PATH dedicated significant resources for project and partner staff training and knowledge enhancement during the project period (see Table 7 below). In addition, staff has benefited from participating in PATH's external TB consultant visits, national program evaluations, and technical roundtables and training workshops organized by our own team as well as by WHO, KNCV, and other partners.

As a result, the capacity of PATH's local technical staff has grown tremendously, as evidenced by the credibility they now have with national and sub-national counterparts. Further evidence can be seen in their leadership in national and sub-national working groups related to TB control program planning and implementation, and the confidence with which they conduct training and provide supervision to national partners and make presentations in national and international settings. In addition, the willingness to consider reforming the NTP among key national authorities was certainly accelerated due to their participation in project-supported study tours, training workshops, and program reviews. Participation in national and international training events and appropriately focused study tours has been essential to building both capacity and confidence among project and partner staff to upgrade services and institute needed TB program reforms.

Table 7. Training activities by TB project staff.

Event/Training	Technical focus	Location and date	Participants and affiliations
Johns Hopkins University Mini-University/Child Survival Technical Support Project	DIP review and support	Baltimore, MD, USA June 2004	A. Tsarenko A. Bishop
14 th Russian Federation National Congress on Lung Diseases	MDR TB and TB/HIV control management	Moscow, Russia June 2004	A. Tsarenko T. Ivanenko A. Dadu Partners
WHO course for TB consultants, European version	TB control management	Sondalo, Italy July 2004	A. Tsarenko
WHO European Interagency Coordinating Committee (3 rd meeting focused on TB)	TB/HIV, MDR TB, and DOTS implementation	Sinaia, Romania September 2004	A. Tsarenko
International course on applied epidemiology, Rolling School of Public Health at Emory University	Applied epidemiology	Atlanta, GA, USA October 2004	A. Dadu
35 th Annual IUATLD Conference and 5 th DOTS Expansion Working Group Meeting	TB program management	Paris, France October 2004	A. Bishop K. Gamazina A. Tsarenko
TB Training and Education Collaborative for the WHO European Region	Advocacy, communication, social mobilization, and training	Copenhagen, Denmark November 2004	N. Zaika
WHO course for program managers on TB/HIV collaborative activities	TB/HIV	Sondalo, Italy April 2005	A. Dadu K. Gamazina

Event/Training	Technical focus	Location and date	Participants and affiliations
Fourth European WHO Workshop for Tuberculosis Laboratory Managers	Laboratory management	Warsaw, Poland May 2005	T. Ivanenko
Flagship summer school course on health sector reform and sustainable financing	Health reform and financing	Budapest, Hungary August 2005	K. Gamazina A. Tsarenko
Coursework project implementation accountabilities for project managers at PATH (facilitated by Eric Walker, Vice President PATH HQS)	Project planning, PATH policies and procedures, and financial management	Kyiv, Ukraine October 2005	All PATH Ukraine staff: K. Gamazina T. Ivanenko A. Dadu A. Tsarenko N. Zaika M. Vynnytska
36 th Annual IUATLD Conference	TB program management	Paris, France October 2005	A. Bishop K. Gamazina
National TB Control Symposia	TB control management	Ternopil', Ukraine October 2005	A. Tsarenko
International Principles of TB Control: Laboratory Diagnosis, Management, and Surveillance	Microbiological evidence of TB; evidence-based medicine	London, England October 2005	A. Tsarenko
15 th Russian Federation Congress on Respiratory Diseases	MDR TB management; diagnosis and treatment of pulmonary TB among children and adults	Moscow, Russia October–November 2005	A. Tsarenko A. Dadu Partners
National TB/HIV co-infection training	Management of TB/HIV co-infection	Uzhgorod, Ukraine November 2005	A. Tsarenko
TB Training and Education Collaborative for the WHO European Region	Advocacy, communication, social mobilization, and training	Copenhagen, Denmark November 2005	K. Gamazina T. Ivanenko N. Zaika
TOT for TB control managers and PATH TB Team staff (facilitated by Natalia Zaika)	Project implementation and monitoring; theory and practice of organizing and conducting trainings	Kyiv, Ukraine December 2005	K. Gamazina T. Ivanenko A. Dadu A. Tsarenko O. Klochkov
WHO Training on Laboratory Diagnosis of TB: Current Methods and Approaches	Laboratory management	Donetsk, Ukraine March–April 2006	T. Ivanenko
MEASURE workshop, Monitoring and Evaluation of the NTP	Monitoring and evaluation of the NTP	Kyiv, Ukraine May 2006	T. Ivanenko A. Dadu
TB Training and Education Collaborative Meeting for the WHO European Region	Advocacy, communication, social mobilization, and training	Copenhagen, Denmark May 2006	D. Richardson
Study tour: Slovakia (advocacy component)	TB control management	Vysne Hagy, Slovakia May 2006	K. Gamazina A. Tsarenko Partners
Study tour: Latvia (advocacy component)	MDR TB treatment and management	Riga, Latvia June 2006	A. Tsarenko T. Ivanenko N. Zaika
WHO training course on TB/HIV collaborative activities in Europe	TB/HIV	Sondalo, Italy July 2006	T. Ivanenko A. Tsarenko

Event/Training	Technical focus	Location and date	Participants and affiliations
Study tour: Estonia (laboratory component)	Organization of external laboratory QC and safety measures, national register for smear-positive cases	Tallin-Tartu, Estonia August–September 2006	T. Ivanenko K. Gamazina Partners
Study tour: Kyrgyzstan (MIS component)	Establishment and management of the information system for the NTP	Bishkek, Kyrgyzstan August–September 2006	A. Dadu Partners
Institutional Review Board training on protection of human subjects in research	Human subjects' protection	Online course 2004/2005	A. Dadu A. Tsarenko M. Vynnytska
TB basics, USAID Global Health E-Learning Centre	TB issues and DOTS strategy implementation	Online course 2005/2006	A. Dadu M. Vynnytska
Medical management of TB, Francis J. Curry National TB Center	TB management	Online course June 2006	A. Dadu
HIV basics, USAID Global Health E-Learning Centre	HIV/AIDS-related issues	Online course August 2006	M. Vynnytska
Monitoring and evaluation fundamentals, USAID Global Health E-Learning Centre	Monitoring and evaluation	Online course August 2006	M. Vynnytska

IUATLD: International Union Against Tuberculosis and Lung Disease.

C. Supervision of project staff

As of October 1, 2005, Dr. Kateryna Gamazina assumed leadership and supervision of the project team. This change was prompted by the addition of funding from the USAID Regional Mission through the TASC2 mechanism, which greatly expanded the team's scope of work and demanded greater management expertise. Dr. Anatoliy Tsarenko, previously the Project Director, became the team leader for the policy and advocacy component of the program, as well as supervisor of clinical training in the expansion oblasts, supported by the USAID Regional Mission through TASC2. Dr. Gamazina, who was promoted in 2006 to the position of Country Director for PATH in Ukraine, now works closely with program staff to plan and implement all components, convening regular staff meetings, conducting supervisory visits, and managing key partnerships with national counterparts, implementing partners, and USAID in Ukraine. Amie Bishop, as Regional Program Director for PATH in the Newly Independent States (NIS), and D'Arcy Richardson, as PATH's Technical Director for TB Control, also provide management and technical support to the team. As part of PATH's general management system, annual performance reviews are conducted. At the same time, performance goals for the coming year for each employee are also developed. Given this structure, internal supervision has been adequate.

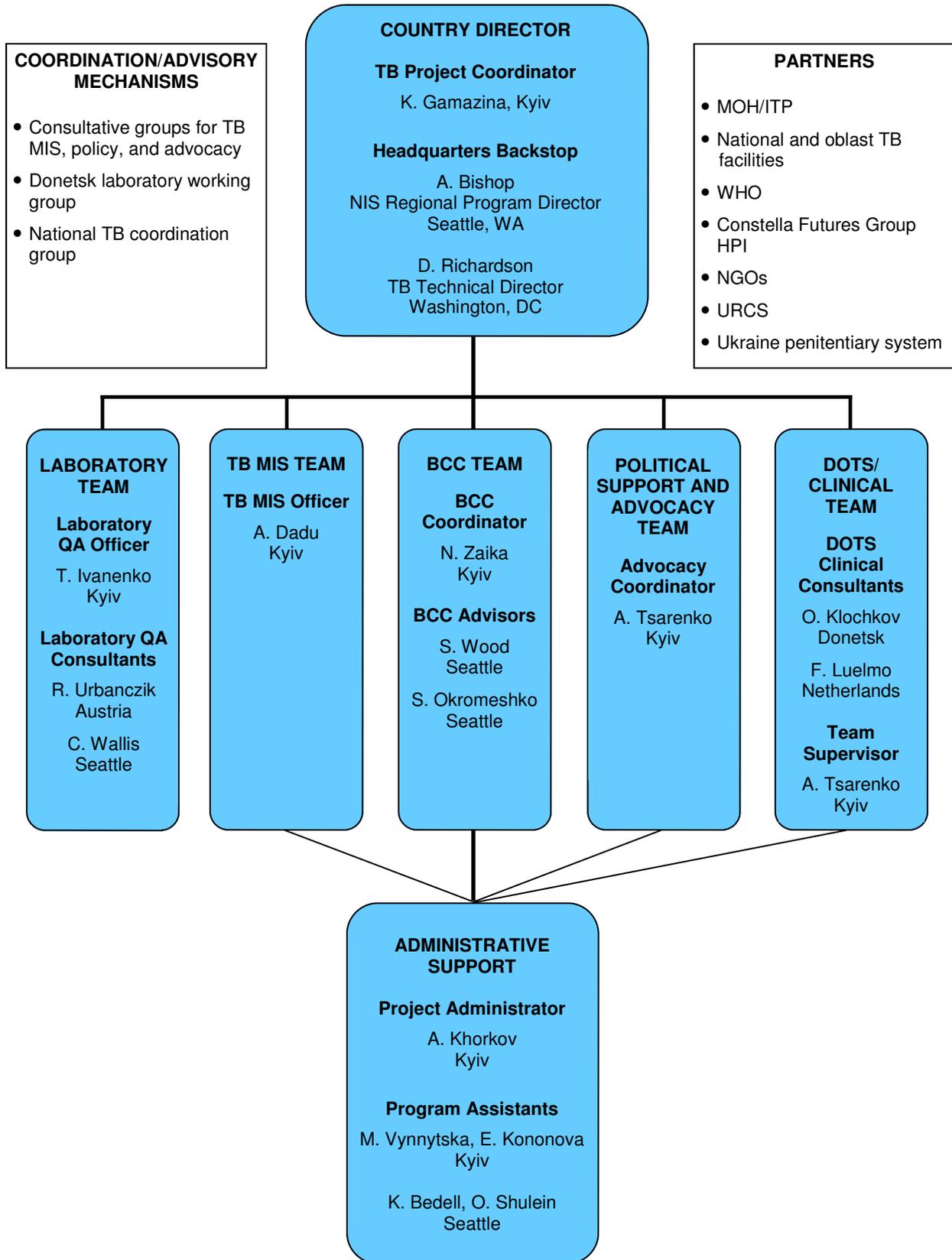
Regarding supervision of local consultants and trainers, each program officer conducted regular supervisory and back-up visits to sites, established systems of regular reporting, and backed up training workshops, as needed. Monitoring visits to the clinical sites also were performed regularly. In addition, key consultants participated in PATH's regular project team meetings and had access to an electronic record of all key project-related plans, materials, and resources. PATH also conducted a TOT workshop on adult learning and training and monitoring methodology for all designated trainers, consultants, and relevant staff.

D. Human resources and staff management

PATH has had personnel policies and procedures in place in its Ukraine office for many years. These policies are reviewed and supported by PATH's headquarters-based Human Resources Unit in Seattle. During the second and third years of the project, PATH hired additional staff and consultants to accommodate the expanded scope of work supported by the USAID Regional Mission. Specifically, a DOTS/TB clinical management specialist was hired in April 2005, a new program assistant was hired in September 2005, and a number of local consultants at the regional level (coordinators and trainers) were hired over these two years. The team has remained remarkably cohesive and collaborative, as evidenced by minimal staff turnover; only one program assistant has left, and the original person hired to oversee the BCC component did not pass his probationary period and was quickly replaced during the first three months of the project. All other original team members remain.

Due to a lack of adequate in-country technical and infrastructural capacity, the team was not able to hand over key activities as promptly as had been planned. This placed added stress on the existing team, which functioned at more than full-time capacity during much of the project period. PATH's funding, however, did not permit hiring new full-time staff, although the roster of consultants was expanded to enable full coverage of planned activities. Please see the updated management chart—Figure 3 on the following page.

Figure 3. Management chart.



E. Financial management

PATH's staff in Kyiv City provided local financial management for the project. All USAID requirements concerning procurement, financial transactions, reporting, and value added tax exemption have been followed. Staff in PATH's headquarters in Seattle backstopped the project and reviewed all financial reports before submission to USAID. Funding sources have been carefully tracked through the use of budget codes, which is especially important given that USAID has been using several mechanisms (CSHGP and TASC2) to support PATH in advancing TB control in Ukraine.

F. Logistics

PATH's Kyiv office staff oversaw all logistics related to project implementation. They were responsible for local equipment and training and supply procurement (e.g., minor laboratory supplies and equipment, LCD projectors, computers), as well as for all arrangements for domestic and international travel. PATH has consistently followed well-established logistics and procurement procedures that comply with both USAID and PATH organizational requirements. PATH has received approval from the USAID Mission for its plan to transfer residual expendable property purchased under this project to its Ukraine partners.

G. Information management

PATH's project team tracked progress toward objectives at multiple levels. Regarding actual implementation of DOTS, standard and well-defined approaches to cohort analysis were used. The PATH MIS specialist, in particular, has led the development and adoption of a TB MIS that conforms, to the extent allowed by Ukrainian officials, to international standards and generates data for cohort analysis. This system is now part of the government structure. PATH provided support to government counterparts to enter and analyze the data, troubleshoot, and monitor progress. This system will remain in place after the project is completed and has resulted in a strengthened national- and oblast-level data collection system for TB control. For more details, see Objective 3 in Section II.B.

In addition, PATH regularly monitored objective-specific indicators as outlined in the project's monitoring and evaluation matrix. Each program officer was responsible for conducting baseline and follow-up research to measure changes in knowledge, practices, and capacity-building outcomes, as well as to track training pre- and post-tests to determine short-term measures of training effectiveness and satisfaction. A wide range of special assessments, focus groups, surveys, and other evaluation methods (e.g., laboratory panel testing) were used to monitor effectiveness of both the TB program as implemented by country partners and PATH's interventions to strengthen TB control. The results of these efforts are detailed in Attachment A.

H. Technical and administrative support

The TB Team has benefited from ongoing technical and administrative support from PATH headquarters in Seattle; PATH's Strategic Program on HIV/AIDS, TB, and Malaria in Washington, DC; and from external consultants such as Dr. Fabio Luelmo, Dr. Richard Urbanczik, and Dr. Ivan Solovic. In particular, the mid-term and final evaluations were extremely valuable. Details regarding consultant visits are provided in Section II.C.3. Project

staff also routinely discussed technical approaches with USAID personnel in both Washington, DC, and from the Regional Mission, as well as with WHO, World Bank, and STOP TB Partnership colleagues. In total, headquarters' support to the project required approximately 25 percent of project funds.

I. Mission collaboration

The overall goal of the USAID Regional Mission's 2003 to 2007 Strategic Plan is to "improve the economic and social well-being of all Ukrainians within a framework of democratic governance."⁴ Strategic Objective Five (SO5), "Improved Social Conditions and Health Status," comprises three key intermediate results. Of these, IR5.1, "improved health promotion and efficiency of quality health care," is directly relevant to PATH's efforts in TB control, as it states that the "capacity to manage the risk of infectious diseases will be improved." Collaboration with the USAID Regional Mission in Kyiv has been excellent throughout the project, and has resulted in ongoing support for expansion of PATH's TB work from the Mission through the TASC2 mechanism. Meetings and teleconferences with Mission health team staff are frequent, and Mission staff have expressed appreciation for and satisfaction with both the quantity and quality of communications. PATH staff also noted that Mission staff involvement in TB policy issues at the national level (particularly the support of the Office of Health and Social Transition Director) has been crucial to moving the dialogue forward and allowing for some breakthroughs with respect to implementation of policy consistent with international TB control norms.

J. Management lessons learned

Overall, PATH's management plan and structure was adequate for achieving the scope of work. Nevertheless, a few key lessons learned have been identified, as follows:

- Ensure that time needed to manage official relationships at the national level is sufficient. Although PATH staff in Ukraine are very familiar with the bureaucratic and regulatory issues related to providing technical assistance in health in the country, the original estimated level of effort did not fully take into account the significant political resistance to DOTS that exists. In fact, considerable additional time was necessary to address national stakeholder concerns, negotiate new policies, and obtain permission, in some cases, to move ahead with project activities.
- Consider involving key international consultants early in the program. Although speculative, bringing in international consultants to work with national stakeholders may have accelerated progress toward willingness to reform the TB system. While our laboratory consultant, Ms. Carolyn Wallis, came to Ukraine early in the first year, other, more senior consultants, did not come until the middle of the second year or later. These visits proved extremely important to moving the project agenda forward.
- Accurately estimate in-country public-sector capacity to assume leadership over time. PATH staff were aware that technical and infrastructural capacity within government programs, in general, was weak. The team, however, found that it was not able to institutionalize key

⁴ United States Agency for International Development (USAID) Regional Mission for Ukraine, Belarus, and Moldova. *USAID/Ukraine Country Strategic Plan for FY 2003–2007*, Kyiv: USAID; 2002.

interventions as quickly as hoped. This placed significant burdens on the team to implement training, ensure quality, and provide refresher workshops.

- Establish smooth communication and collaboration with stakeholders from the start. PATH worked hard to inform and consult with all key stakeholders at all levels from the start of the project. This proved useful, especially during the country's tumultuous political changes. Although some key officials were replaced, lower-level MOH personnel, especially at the oblast levels, remained engaged and helped provide consistency until the government stabilized.

IV. Other issues identified by the team

None.

V. Conclusions and recommendations

In three years of CSHGP project work, PATH has contributed to significant progress in TB control in Ukraine. A major win for the project and all partners working in TB control in Ukraine has been the sea change in attitudes toward a DOTS-based TB control strategy from the national level down to the provider level in project areas. While more difficult to quantify, this is a major achievement without which the more practical improvements in TB control could not have been made. New national and oblast legislation and policy documents supporting modern TB control standards, the creation of a central coordinating unit for the NTP, increased commitment and interest from officials, involvement of local organizations such as the URCS, and increased demand for DOTS training from other oblasts all speak to the magnitude of the change that has taken place in Ukraine. This change was made possible in part by the efforts of PATH to build strong collaborative relationships with in-country and international partners and donors and to field credible, well-trained, and experienced project staff, supplementing their expertise with high-level consultants who could add weight to their recommendations for crucial health system and medical practice changes. Working at the oblast level to build support and demonstrate the effectiveness of a DOTS-based strategy was instrumental in overcoming national-level resistance to changing TB control practices. The deep involvement of USAID Regional Mission staff and their close working relationships with PATH, WHO, and Constella Futures Group staff have been very important in the success of this project and the overall effort to address Ukraine's TB issues.

In the project areas, there has also been marked progress on technical improvements in TB control. PATH has been instrumental in introducing and supporting adoption of a standardized paper and electronic MIS that is able to collect and analyze cohort data according to international standard practices. Oblasts are just now starting to use this information to evaluate their programs and make improvements. PATH has worked with in-country colleagues and partners to initiate major laboratory improvements in facilities, equipment, infection control practices, sputum smear microscopy, culture, and drug susceptibility testing so that at the oblast level, a functioning laboratory network exists. There is now a QC system in place, and improvements in laboratory diagnosis are continuing.

As a result of the project, more than 2,600 TB specialists, general health practitioners, and laboratorians have been trained in DOTS implementation. DOTS training is also being incorporated into the curricula of medical institutions for both pre-service and post-graduate training. TB case detection has been incorporated into PHC settings as a routine activity. DOTS coverage in Ukraine has increased to cover more than 30 percent of the population (under this project alone—overall coverage is more than 40 percent), up from approximately 6 percent at the start of the project in 2003, when DOTS was being piloted in Donetska Oblast and Kyiv City. Additional expansion to other oblasts is occurring with USAID funds through TASC2, in collaboration with WHO.

PATH has also led efforts to develop client-centered approaches to TB diagnosis and treatment that are critical in this high-stigma environment. Training of providers to improve communication with their clients has had a very positive effect on client-provider relationships and has the potential to support further increases in treatment completion. In addition, providers now have the skills to offer HIV counseling and testing to clients, which is increasingly important, as Ukraine's HIV epidemic shows exponential growth. PATH's work with the URCS has resulted in a successful and sustainable model for TB patient support for treatment completion, with URCS nurse/trainers now training additional URCS visiting nurses and raising funds from local government and community organizations to continue to provide social support services to TB patients.

While the results of PATH's educational efforts are more difficult to assess because of challenges in collecting and analyzing data on knowledge and behavior change over relatively short timeframes, a high level of understanding of TB transmission and symptoms continues in the general public. Future communications efforts will be more focused on addressing issues that continue to be identified as barriers to TB diagnosis and treatment, including stigma and discrimination within the health care system, poor client-provider interactions, the misperception that TB treatment is expensive, and particular knowledge deficits among populations at higher risk for TB (e.g., prisoners, injection drug users).

A few key best practices and lessons learned include the following:

- Working to change policy and political will is an extremely time-consuming and labor-intensive process that should be factored into project planning.
- The close coordination of all donors and partners has been instrumental in increasing political commitment by crafting one consistent message on TB and using different players to exert pressure on officials or mobilize stakeholders for advocacy.
- Starting with oblast- and rayon-level efforts to circumvent strong national opposition to DOTS has created useful allies and has supported the changes seen at the national level.
- Using a few high-level consultants at key points in the project has had two very positive effects: increasing staff knowledge and confidence, and augmenting the weight of recommendations to national and oblast officials.
- Targeted, well-planned exchange visits (with a specific purpose) to other countries and other oblasts—using the “seeing is believing” strategy—has convinced many skeptics that DOTS

can work in the European Region, and is a particularly useful strategy for supporting changes in practice throughout the region.

- Working through existing structures to institutionalize DOTS, such as the URCS and medical institutions, promotes the sustainability of project activities.

PATH plans to share these best practices and lessons learned widely, through a number of mechanisms. PATH will continue to present results of the project at meetings and symposia in Ukraine. PATH headquarters staff will participate in the CORE Group's *Lessons Learned Exchange* in February 2007, and will also present project activities and outcomes at the Global Health Council conference in 2007 in a panel tentatively entitled "Building Partnerships in the Europe and Eurasia Region to Combat Infectious Diseases." PATH staff in Ukraine, working with headquarters staff, have created a timeline for production of a number of journal articles on the project, to share information on laboratory QC, data management, and client-provider relations. Poster and presentation abstracts were submitted to the 4th European Regional Meeting of the International Union Against Tuberculosis and Lung Disease to be convened in Latvia in 2007. Other abstracts will be submitted for consideration at other relevant conferences. A list of project-related presentations and publications is provided in Attachment C.

Overall, the project has successfully reached its objectives, but the ultimate impact on TB control is yet to be seen. With the continuation of the project through additional USAID funds, scale-up is occurring, and PATH will be able to monitor standard TB indicators over a longer period to gain a better understanding of the longer-term impact of project activities. It is expected that TB indicators in Ukraine will continue to improve as diagnosis, treatment, and data collection and analysis continue to improve, supported by project activities.

A number of challenges remain. Rapid increases in HIV prevalence will likely have a negative effect on TB incidence in the short term. There are preliminary indications that MDR TB may be contributing to treatment failures, particularly in high-burden oblasts. Stigma around TB remains high and prevents early diagnosis. Corruption within the procurement system and its effects on TB drug quality and supply is difficult to combat and remains a pressing problem. Continuing political changes at the national level could slow further DOTS expansion, and uncertain future donor funding makes planning more difficult.

While tremendous progress has been made, much work remains to be done to consolidate gains that have been made and ensure sustainability. The final evaluation noted the following areas for continued improvement or new support from PATH:

- The new national-level policies and guidelines should be institutionalized in procedural manuals for health facility staff and incorporated into ongoing trainings.
- Program monitoring and evaluation, particularly at the national level, need strengthening and continued support to improve the use of data for guiding program decisions.
- Laboratory EQA should be expanded beyond panel testing to include slide rechecking. A system for QA of supplies and equipment, particularly culture media, should be instituted.
- Drug supply management and drug QC issues should be addressed as a priority identified by providers across Ukraine.

- ACSM activities should transition away from general IEC efforts to focused messages on specific topics and to social mobilization and community support for TB control.
- Mechanisms for integration of TB and HIV services should be introduced and evaluated for larger-scale roll-out.

Further details about the final evaluation process can be found in Attachment D (Evaluation Team Members), Attachment E (Areas and Institutions Visited and Persons Interviewed), and Attachment F (Evaluation Assessment Methodology).

VI. Results highlights

Promising practice results highlight number one: reducing TB treatment default in Ukraine

Problem Statement

A key challenge for any TB control program is to identify people with active disease as early as possible so that they can be effectively treated. Since standard treatment courses are long, a related challenge is minimizing treatment default or interruption. In Ukraine, as in many countries, minimizing default rates can be especially difficult among socially marginalized populations. PATH and its partners, therefore, sought to develop and pilot a model strategy to enhance support and facilitate ambulatory treatment completion, especially among vulnerable populations, in collaboration with local NGOs and medical facilities involved in TB care.

Project Input

After a thorough situation analysis, PATH initiated a partnership with the URCS, which historically has provided medical and social support to socially vulnerable people through its Visiting Nurses Service and its network of Red Cross centers. Efforts initially focused on Donetska Oblast and Kyiv City to strengthen visiting nurse skills to conduct outreach to newly released prisoners, PLHIV, homeless individuals, and other socially disadvantaged populations; to observe TB treatment; and to reduce treatment default through effective counseling and support. In early 2006, the intervention expanded to Kharkivska and Dnipropetrovska Oblasts. In all locations, the URCS and PATH developed agreements with TB dispensaries and helped create volunteer working groups that included patients, to design locally appropriate social support models for TB patients. In addition, rayon coordinators assisted in identifying linkages with social services and monitoring the program. A model for communication involving the patient, the URCS nurse, and the doctor also was created.

Magnitude of the Intervention

More than 100 visiting nurses were trained in the 4 oblasts, and more than 1,200 patients have been supported by the nurses. In all sites, visiting nurses and rayon coordinators convene weekly meetings to share experience and information. Each TB patient has a “client card” that documents treatment adherence. In many cases, either the oblast health administration or the URCS itself provides other forms of social support—not funded by the CSHGP project—such as food packages, clothes and footwear, toiletries, and hot meals. In addition, the URCS has been

instrumental in disseminating informational materials to patients, their families, and community groups and in establishing peer-to-peer programs, ultimately enhancing equity in TB control.

Results

As a result of PATH's collaboration with the URCS, treatment default rates in two pilot areas of Donetsk Oblast went from more than 20 percent to zero. Further, the project helped create a cadre of trained volunteers, stimulate increased community involvement, and improve governance capacity of local organizations to address TB. The URCS continues to raise funds from local government and community sources to provide social support to TB clients. A key lesson learned has been the importance of using existing structures and services to mobilize communities and render support to TB patients. These organizations have important leverage with local government and are eager to reassert their relevance in improving health. Finally, this intervention demonstrates that default rates can be decreased through a patient-oriented approach to care. PATH believes that the sustainability and scalability of this approach is possible because of these factors.

Promising practice results highlight number two: the case of Ukraine—advancing evidence-based practice in TB in a former Soviet country

Problem Statement

TB is a significant public health problem in Ukraine, with TB rates that more than doubled between 1992 and 2002 in a setting where HIV and MDR TB rates have also increased. Rates have now stabilized at about 82 notified cases per 100,000 per year, representing an estimated annual burden of 40,000 cases. Ukraine, like other post-Soviet countries, has resisted adoption of international norms for TB control, preferring to maintain longstanding practices that are often ineffective and costly. These include active screening with miniature X-ray (fluorography), annual tuberculin screening of children for active case detection, BCG re-vaccination, mandatory and lengthy hospitalization, non-standardized drug regimens, and heavy reliance on a vertical structure of specialists and specialized facilities.

Project Input

PATH introduced DOTS at a regional level and supported the data collection and analysis necessary to convince skeptics that DOTS could work in Ukraine. PATH enlisted the help of DOTS “converts” to train additional staff at the regional level and to present findings to colleagues from other areas of Ukraine, increasing the credibility of the findings and fueling the demand for support to DOTS implementation. PATH also sought ways to accommodate existing policies or practices that were not directly counter to the DOTS approach (e.g., heavy use of X-ray). Exchange visits to other countries in the European Region were arranged for key stakeholders so that they could witness first hand specific TB control successes related to DOTS implementation. Other interventions included sponsorship to attend TB technical meetings, convening of technical symposia in Ukraine, organization of an external review of the NTP, leadership in the development of national TB guidelines, and increased access to international technical literature. Upgrading skills and services in the target regions was essential—but could be implemented on a wide scale only after sufficient political support had been achieved. PATH also forged important relationships with other TB “players” in Ukraine, such as USAID, WHO,

KNCV and KIT, the Constella Futures Group, and the World Bank, so that coordinated messages at the national level would speed DOTS acceptance, as well as accelerate pilot implementation.

Magnitude of the Intervention

Because of the political sensitivities related to TB control in this region, PATH sought to stimulate support among stakeholders at sub-national levels so that they could begin to advocate for reform nationally. Pilot work was conducted in one oblast and expanded to include additional regions once progress had been made. Within three years, DOTS coverage jumped from just greater than 6 percent to more than 30 percent of the population.

Results

Fourteen new pieces of legislation in support of modern TB control standards were passed during the three-year project period. All project areas are using a surveillance system capable of generating standard cohort data, where previously there had been none. PATH also initiated major laboratory improvements in facilities, equipment, infection control practices, sputum smear microscopy, culture, and drug susceptibility testing so that a functioning regional laboratory network now exists. More than 2,600 health personnel have been trained in DOTS, and curricula are being incorporated into the medical pre-service and post-graduate training. Finally, TB case detection has been incorporated into PHC settings as a routine activity.

VII. Attachments

Attachment A. Detailed summary of progress by objective.

OBJECTIVE 1. Improve capacity for DOTS expansion within Ukraine (A. Tsarenko).			
Objectives	Major planned activities	Status	Comments
1.1. Monitor development of new legislation and recommend additions/revisions.	<ul style="list-style-type: none"> Assess level of national and oblast support. 	Done	<ul style="list-style-type: none"> Baseline and follow-up survey of policymakers conducted. Participated in revising and developing new TB policies and legislation acts, such as Order #610, “About introduction in Ukraine of the adapted DOTS-strategy;” “MOH Concept of 2007–2011 NTP” the DOTS-strategy adapted to the Ukrainian condition and situation;” and more than ten other important MOH TB control orders
	<ul style="list-style-type: none"> Set up policy and advocacy consulting group to assist the MOH in developing and implementing appropriate orders (in collaboration with HLWG activities). 		
	<ul style="list-style-type: none"> Convene quarterly policy and advocacy consulting group meetings. 		
1.2. Convene technical symposia.	<ul style="list-style-type: none"> Convene regional and national symposia on various topics related to improved TB control. 	Done	<ul style="list-style-type: none"> Supported more than 750 TB specialists and health authorities to attend 3 national symposia; 2 study tours in Slovakia and Latvia; 3 roundtable stakeholders meetings; 3 workshops for health authorities; and 10 international and national conferences, symposia, and meetings organized by WHO, IUATLD, KNCV, and other international organizations.
1.3. Increase access to up-to-date technical literature among TB decision-makers and specialists.	<ul style="list-style-type: none"> Participate in key national meetings and committees related to TB control in Ukraine. 	Done	
	<ul style="list-style-type: none"> Support key local TB experts and officials to attend regional or international technical conferences and meetings. 	Done	

OBJECTIVE 2. Improve the quality of TB diagnostic services in at least two oblasts (T. Ivanenko).			
Objectives	Major planned activities	Status	Comments
2.1. Introduce direct smear microscopy QC systems into primary health care (PHC) and TB laboratories in project regions.	<ul style="list-style-type: none"> Identify and train oblast teams to implement QA procedures in project sites. Convene TOT on smear microscopy QA/QC. Convene national TOT on smear microscopy and culture QA/QC. 	Done	<ul style="list-style-type: none"> QA/QC oblast teams identified and trained. Laboratory network was established for TB diagnostics by smear microscopy in the PHC laboratories. PHC laboratory specialists trained on direct smear microscopy procedures. Two trainings on laboratory TB diagnosis by culture and EQC provided (first training, ITP specialist involved; second training, international specialist involved). Internal QC of direct smear microscopy based on panel testing implemented (first stage, 10% of laboratories; second stage, 30%; third stage, 100%).
2.2. Develop guidelines and introduce QC for culture and identification tests for Mtb.	<ul style="list-style-type: none"> Assess existing capacity to implement, document, and sustain QC for smear microscopy and culture methods in project sites. Conduct ongoing monitoring of implemented QA procedures. Assess alternative diagnostic methods to serve as adjuncts or replacements to smear microscopy. 	Done	<ul style="list-style-type: none"> Guidelines developed on establishing and providing EQC of TB laboratory diagnostics by direct smear microscopy. At the moment, there are no unique standardized guidelines on establishing and providing EQC of TB laboratory diagnostics by culture and DST. Countries are developing such guidelines on their own. EQC of laboratory TB diagnostics by culture and DST is provided only by the supranational laboratory network.
2.3. Strengthen DST and MDR TB monitoring.	<ul style="list-style-type: none"> Develop electronic surveillance tool to monitor drug resistance. 	Not completed	<ul style="list-style-type: none"> Absence of national reference laboratory hampered strengthening of the DST QC and MDR TB surveillance. Electronic tool for drug resistance surveillance designed and implemented in target regions. National reference laboratory guidelines for TB laboratory diagnostics by culture are required for strengthening the Ukraine TB laboratory network.
2.4. Evaluate new TB tests.		Not done	<ul style="list-style-type: none"> No viable candidate for evaluation was identified during the project period.

OBJECTIVE 3. Improve use of monitoring and surveillance data for TB program management (A. Dadu).			
Objectives	Major planned activities	Status	Comments
3.1 Evaluate and revise current DRRS forms and introduce analytic methods to assess patient progress and treatment outcomes, overall program performance, and rapid managerial assessment protocols.	<ul style="list-style-type: none"> Form discussion group on TB MIS issues. 	Done	<ul style="list-style-type: none"> MIS conception presented and discussed with stakeholders. DRRS forms elaborated and implemented.
	<ul style="list-style-type: none"> Convene interagency technical working group on TB MIS (in collaboration with HLWG activities). 	Done	<ul style="list-style-type: none"> New reporting and recording system based on DOTS designed in cooperation with the World Bank, WHO, ITP, and oblast TB dispensaries. System implemented throughout the country, not just in the five target regions as originally planned.
	<ul style="list-style-type: none"> Analyze oblast situation regarding TB MIS: identify needs, priorities, available resources, behavior/motivation issues, obstacles to desired performance, and actions necessary to solve problems. 	Done	<ul style="list-style-type: none"> Assessment completed, and findings used to negotiate with partners (WHO, the World Bank, ITP) regarding establishment of MIS for the entire country. Tool on DRRS forms' needs developed.
	<ul style="list-style-type: none"> Conduct national TOT on recording and reporting. 	Done	<ul style="list-style-type: none"> National MIS coordinator trained to provide M&E of NTP and manage MIS. Two specialists from national ITP trained on DRRS.
	<ul style="list-style-type: none"> Provide technical assistance to adopt reforms in other regions. 	Done	<ul style="list-style-type: none"> Participated in the evaluation of the NTP in seven regions to select expansion oblasts. Involved non-project sites in trainings and workshops on MIS.
	<ul style="list-style-type: none"> Participate in comprehensive review of results in the pilot regions and formulate recommendations for future directions. 	Done	<ul style="list-style-type: none"> Participated in 2000–2005 assessment of NTP” new NTP 2007–2011 plan development, application to GFATM in 2005 and 2006. Established oblast-level roundtables on M&E analysis for guiding oblast- and rayon-level decision-making on quarterly basis. Provided TB epidemiological and economical burden analysis for whole country and assisted oblast and rayon personnel with conducting analyses by rayons to guide case finding and treatment approaches.

OBJECTIVE 3. Improve use of monitoring and surveillance data for TB program management (A. Dadu).			
Objectives	Major planned activities	Status	Comments
3.2 Design and implement a TB EMIS for surveillance and case management of registered TB cases (categories 1, 2, and 3).	<ul style="list-style-type: none"> Develop recommendations and action plans. 	Done	<ul style="list-style-type: none"> Developed and implemented EMIS in Donetsk Oblast and collaborated with KNCV to support implementation in Kyiv City. Revisions made during project expansion to Kharkivska and Dnipropetrovska Oblasts and Sevastopol City.
	<ul style="list-style-type: none"> Design and implement a TB EMIS. 	Done	<ul style="list-style-type: none"> All oblast districts (achieved 100% of target) supplied with a personal computer now have a functioning EMIS (Donetska Oblast, 13/39 districts; Kharkivska Oblast, 3/34 districts; Sevastopol City, 1/1 district; Dnipropetrovska Oblast, 3/34 districts). A total of 68 specialists trained (data entry clerks and analysts).
	<ul style="list-style-type: none"> Create a Ukrainian TB Internet forum, listserv, and electronic TB library. 	Done	<ul style="list-style-type: none"> Electronic TB library created and distributed on compact discs to partners. Participated in review of functional specifications of Eurasia Health Knowledge Network. Forty members included in Ukraine TB Info Network and weekly disseminating of TB news .
3.3. Develop tools and indicators for routine monitoring of diagnostic efficiency and effectiveness of existing and new TB screening methods and strategies.	<ul style="list-style-type: none"> Develop/adapt key tools and methods on analytic methods for health care providers, laboratory workers, and others. 	Done	<ul style="list-style-type: none"> Guidelines on M&E of NTP developed and training on its use provided in all project sites and at national level (achieved 100% of target). Checklists for field monitoring/supervision developed for each program component and submitted for field testing. All tools approved and implemented throughout the country.
	<ul style="list-style-type: none"> Disseminate results through symposia, seminars, and/or a national meeting. 	Done	<ul style="list-style-type: none"> Presented analysis of TB situation in the world, region, and country to partners at various local forums. Presented review of NTP 2000–2005 to stakeholders. Published article in <u>Journal of Preventive Medicine of Ukraine</u>, <u>SES</u> entitled <i>TB in Ukraine: Strengthening the TB control program</i>. September 2005, #5, pp. 52–55. Assisted consultant with presentation of cohort analysis in Sevastopol City at Ukrainian TB conference.. Presented analysis of M&E indicators at M&E workshop organized by WHO in Crimea, 2006.

OBJECTIVE 3. Improve use of monitoring and surveillance data for TB program management (A. Dadu).			
Objectives	Major planned activities	Status	Comments
3.4. Support institutionalization of TB MIS to assess drug susceptibility.	<ul style="list-style-type: none"> Conduct workshops and on-the-job training in new analytic procedures and on using information for management. 	Done	<ul style="list-style-type: none"> DRRS contains a full set of forms for drug susceptibility data management (referral form, laboratory register, and report on drug resistance monitoring). Training provided on use of tools, analysis, and interpretation indicators.
3.5. Develop and introduce model approaches for information system coordination and integration between TB and HIV programs to improve linkages and referral systems among facilities.	<ul style="list-style-type: none"> Monitor and evaluate implementation, provision of technical assistance as needed. 	Done	<ul style="list-style-type: none"> Field for HIV surveillance among TB patients included in case management card. Issues about HIV impact on TB added to MIS training curriculum. Burden of HIV among TB and of TB among PLHIV in Donetsk Oblast evaluated. Recommendation for TB/HIV collaborative activities provided to MOH. Reviewed TB component in application to World Bank for HIV activities. Participated in drafting project proposal, "Addressing TB/HIV Co-infection in Ukraine," to USAID Regional Mission.
3.6. Integrate pharmaceutical management into the TB MIS.	<ul style="list-style-type: none"> Assist with further modification and revision of the system based on feedback from the pilot regions. 	Done	<ul style="list-style-type: none"> Section on drug management added to the case management card, which allows MIS analysts to monitor drug consumption and appropriateness of drug prescriptions according to case management guidelines.

OBJECTIVE 4. Reduce diagnostic delay, increase case detection, and improve adherence to TB treatment (N. Zaika, K. Gamazina).			
Objectives	Major planned activities	Status	Comments
<p>4.1. Increase awareness and understanding of TB transmission, symptoms, treatment, and cure among the general public and at-risk populations.</p> <p>4.2. Improve health-seeking behavior and treatment adherence among people diagnosed with TB.</p>	<ul style="list-style-type: none"> • Validate formative research for development of messages, strategies, and appropriate media for behavior change interventions. 	Done	<ul style="list-style-type: none"> • During start-up phase, conducted formative research that included a KAP survey, exit interviews with TB patients, and focus group discussions with PLHIV. • BCC strategy developed based on results.
	<ul style="list-style-type: none"> • Develop/expand mass media (television, radio, video) to educate groups about the importance of prompt diagnosis and proper treatment of TB. 	Done	<ul style="list-style-type: none"> • One television and two radio spots and printed materials developed and disseminated during the IEC campaign organized between March and September of 2005 and 2006. Television and radio spots broadcast on oblast and regional channels. • Materials printed and distributed: 1.5 million.
	<ul style="list-style-type: none"> • Expand distribution of print materials for specific at-risk audiences. 	Done	<ul style="list-style-type: none"> • According to distribution and work plans, URCS distributed printed materials and information for specific at-risk audiences totaling 150,000 copies.
	<ul style="list-style-type: none"> • Convene media workshops for journalists. 	Done	<ul style="list-style-type: none"> • Conducted 3 workshops in Donetsk Oblast for 27 journalists from oblast newspapers, and 2 in Kyiv City for 23 journalists coinciding with World TB Day.
	<ul style="list-style-type: none"> • Create telephone hotline. 	Done	<ul style="list-style-type: none"> • Hotline created by Kyiv City Red Cross Committee with training from PATH. Hotline receives about 30 calls per month.
	<ul style="list-style-type: none"> • Assess existing community networks for various patient groups. 	Done	<ul style="list-style-type: none"> • Existing community networks studied. URCS selected as main local partner.
	<ul style="list-style-type: none"> • Develop and test model strategies for various target groups. 	Done	<ul style="list-style-type: none"> • Model strategies for vulnerable groups and TB patients developed and implemented in collaboration with URCS in Kyiv City and Donetsk Oblast. Model strategies for general population also developed and implemented. Models then expanded to new target regions.
	<ul style="list-style-type: none"> • Develop materials and support mechanisms for families, including materials with appropriate treatment and care information. 	Done	<ul style="list-style-type: none"> • 24-page booklet for TB patients and families developed, pretested, and printed. Total run: 100,000 copies (5,000 distributed by Red Cross nurses).
	<ul style="list-style-type: none"> • Develop supportive materials for providers and patients. 	Done	<ul style="list-style-type: none"> • 12-page booklet for patients and 6-page brochure for providers developed and pretested in collaboration with health centers.

OBJECTIVE 5. Improve provider practices by strengthening provider capacity to diagnose and treat TB based on DOTS (O. Klochkov, N. Zaika, A. Tsarenko).			
Objectives	Major Planned Activities	Status	Comments
5.1. Finalize training curriculum on IPC/C.	<ul style="list-style-type: none"> Assess provider knowledge. 	Done	<ul style="list-style-type: none"> In-depth interviews conducted during preparation period. Pre-test questionnaires given before and after each training to monitor training effectiveness.
5.2. Train TB providers in IPC/C and VCT.	<ul style="list-style-type: none"> Prepare information materials. 	Done	<ul style="list-style-type: none"> BCC training materials, manual, and handouts developed. Printed materials for GHC providers about DOTS developed; total of 120,000 copies printed.
5.3. Work with Donetsk Medical University to incorporate IPC/C curriculum into training curricula for TB doctors.	<ul style="list-style-type: none"> Expand training on IPC/C, with focus on emerging risk groups. 	On-going	<ul style="list-style-type: none"> A total of 358 health care personnel trained across all 5 target regions during project.
	<ul style="list-style-type: none"> Adapt existing PATH curricula on VCT for use with TB providers. 	Done	<ul style="list-style-type: none"> PATH curricula on VCT adapted. Developed algorithm for HIV counseling for TB patients.
5.4. Improve provider skills in TB case management and follow-up.	<ul style="list-style-type: none"> Implement training to improve TB/HIV co-infection knowledge and strengthen counseling skills and referral for HIV testing. 	Done	<ul style="list-style-type: none"> One-day session on TB/HIV co-infection and VCT added to original training curriculum on effective communication and counseling.
	<ul style="list-style-type: none"> Review and adapt the TB clinical training curriculum developed by WHO and implemented in Donetsk. 	Done	<ul style="list-style-type: none"> In-depth interviews with key TB stakeholders and roundtables and other meetings convened to gain consensus on the curriculum contents.
	<ul style="list-style-type: none"> Adapt for the Ukraine setting the CORE TB Working Group TB training modules developed for USAID-supported PVOs. 	Done	<ul style="list-style-type: none"> Process noted above (interviews, roundtables, etc) included discussion about the CORE TB Working Group modules.
	<ul style="list-style-type: none"> Conduct training workshops for TB providers at all levels, as necessary, on TB diagnosis, treatment, and follow-up in selected oblasts. 	Done	<ul style="list-style-type: none"> All TB specialists in the target oblasts and cities trained.
	<ul style="list-style-type: none"> Conduct TOT and facilitate roll-out training for PHC providers on TB diagnosis and ambulatory treatment follow-up to ensure system readiness for proper referral of patients. 	Done	<ul style="list-style-type: none"> 27 trainers prepared. Over 1650 PHC providers trained.
	<ul style="list-style-type: none"> Collaborate with pre- and post-graduate health education institutions to introduce training curricula on TB treatment using DOTS and conduct TOT with professors of post-graduate training facilities. 	Done	<ul style="list-style-type: none"> Curricula adopted by the Department of Phthysiology at the Donetsk State Medical University to strengthen pre- and in-service training on clinical management of TB based on DOTS.

Attachment B. Final surveys and analyses.

List of relevant tuberculosis-related legislation in Ukraine (2005–2006)

Order of the Ministry of Health of Ukraine, “On approval of the guidelines on diagnosis of extrapulmonary TB [tuberculosis] among HIV/AIDS [human immunodeficiency virus/acquired immune deficiency syndrome] patients,” #597 of September 9, 2006.

Order of the Ministry of Health of Ukraine and Academy of Medical Sciences of Ukraine, “On creation of the All-Ukrainian center for TB control of the MOH [Ministry of Health] of Ukraine,” #474/44 of July 13, 2006.

Order of the Ministry of Health of Ukraine and Academy of Medical Sciences of Ukraine, “On approval of the Guidelines on TB control in compliance with international standards,” #422/40 of June 27, 2006.

Order of the Ministry of Health of Ukraine, “On approval of the protocol for providing medical care/support for TB patients,” #384 of June 9, 2006.

Order of the Ministry of Health of Ukraine, “On approval of the instructions for providing medical care/support for TB patients,” #385 of June 9, 2006.

Order of the Ministry of Health of Ukraine, “On approval of the protocol for implementation of the DOTS [directly observed therapy, short course] strategy in Ukraine,” #318 of May 2006.

Decree of the Cabinet of Ministers of Ukraine, “On establishment of the committee on prevention of HIV/AIDS and other socially dangerous diseases,” #759 of May 31, 2006.

Decree of Verhovna Rada (Parliament) of Ukraine, “On information of the Cabinet of Ministers of Ukraine regarding the TB epidemic situation in Ukraine and activities related to prevention,” #3524-IV of March 14, 2006.

Decree of the President of Ukraine, “On the decision of the National Council of Security and Defense of Ukraine” of January 18, 2006,” and “On approval for the control of dangerous infectious diseases control,” #132/2006 of February 14, 2006.

Order of the Ministry of Health of Ukraine, “On approval of a standard regulation for laboratory and other facilities which provide TB diagnosis and sputum collection,” #50 of February 6, 2006.

Order of the Ministry of Health of Ukraine, “On approval for the temporary use of data recording and reporting forms,” #693 of December 8, 2005.

Decree of the President of Ukraine, “On improvement of governmental management in the fight against HIV/AIDS and TB in Ukraine,” #1674/2005 of November 30, 2005.

Order of the Ministry of Health of Ukraine, “On implementation of adapted the DOTS strategy in Ukraine,” #610 of November 11, 2005.

Order of the Ministry of Health of Ukraine, “On approval of the protocol for providing medical care/support for TB patients,” #45 of January 28, 2005.

Knowledge, attitudes, and practices (KAP) survey results

To assess change in public awareness of tuberculosis (TB) transmission, symptoms, and the need for early diagnosis and treatment, PATH project staff used a baseline and follow-up KAP survey among the general public and specific social groups representing persons of different socioeconomic levels and those at higher risk for TB in Kyiv City and Donetska Oblast. PATH hired Socioconsulting Analytical Center, an independent research firm in Kyiv City, to conduct the KAP survey. The baseline survey was administered in February 2004 to a total of 1,600 individuals in the general public, 60 open market vendors, and 100 clients of food banks in Kyiv City and Donetska Oblast. The follow-up KAP survey was conducted in August 2006 among 1,600 representatives of the general public, 120 open market vendors, and 50 clients of food banks in Kyiv City and Donetska Oblast.

The following table presents a comparison of the data collected at baseline and at the end of project. A full analysis is available in a separate KAP study report, which is currently being finalized.

KAP survey responses, 2004 and 2006						
Do you think TB is a serious problem in your city/oblast?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Very serious	66%	43%	70%	73%	77%	12%
Somewhat serious	20%	40%	15%	17%	12%	38%
Difficult to say	13%	15%	12%	8%	10%	30%
Somewhat not serious	1%	2%	3%	3%	1%	14%
Not serious at all	0%	0.3%	0%	0%	0%	6%
What symptoms of TB do you know? Check all that apply.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Rash	2%	6%	23%	2%	0%	0%
Cough lasting longer than 3 weeks	85%	92%	77%	90%	80%	98%
Severe headache	10%	9%	30%	8%	1%	0%
Nausea	8%	8%	25%	5%	0%	0%
Weight loss	42%	41%	47%	28%	19%	18%
Fever without clear cause that lasts more than 7 days	60%	65%	43%	55%	56%	80%
Chest pain	37%	36%	53%	20%	14%	52%
Shortness of breath	33%	37%	55%	15%	13%	8%
Ongoing fatigue	40%	34%	57%	28%	29%	8%
Difficult to say	6%	3%	7%	3%	11%	2%
Other symptoms	3%	1%	7%	2%	5%	6%

How is TB transmitted? Check all that apply.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Through handshakes	14%	11%	20%	16%	7%	22%
Through the air when a person with TB coughs or sneezes	90%	95%	78%	88%	81%	76%
Sharing dishes	68%	51%	67%	60%	67%	48%
Through touching items in public places (e.g., doorknobs, handles in transportation)	32%	29%	42%	52%	16%	70%
Difficult to say	4%	2%	0%	1%	3%	10%
Other	2%	0.4%	2%	3%	2%	0%
In your opinion, who can be infected with TB? Check all that apply.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Anyone	71%	70%	77%	73%	62%	56%
Poor people	33%	34%	35%	21%	59%	70%
Homeless people	39%	40%	47%	29%	53%	74%
Alcoholics	19%	32%	37%	22%	15%	6%
Drug users	16%	28%	27%	20%	5%	8%
People living with HIV/AIDS	14%	35%	15%	20%	4%	8%
Prisoners, detained	43%	52%	27%	23%	52%	56%
Other	2%	1%	0%	2%	3%	6%
Please evaluate your risk of getting TB.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Considerable risk	37%	32%	60%	57%	15%	48%
Little risk	42%	48%	27%	28%	52%	8%
No risk	12%	14%	10%	3%	19%	4%
Difficult to say	9%	6%	3%	12%	14%	40%
Can TB be cured?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Yes	63%	68%	55%	73%	55%	36%
No	21%	10%	27%	19%	28%	28%
Difficult to say	16%	22%	18%	8%	17%	36%
What would you do if you thought you had symptoms of TB? Check all that apply.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Go to the doctor	91%	94%	95%	93%	74%	52%
Go to the pharmacy	2%	4%	5%	3%	1%	4%
Pursue other self-treatment options (e.g., herbs)	6%	7%	7%	3%	4%	6%

Consult friends	4%	4%	5%	2%	1%	10%
Other	1%	1%	2%	3%	3%	28%
At what point would you go to the doctor?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
When self-treatment does not work	7%	8%	3%	20%	14%	0%
When symptoms that look like TB last for 3–4 weeks	26%	34%	5%	27%	28%	20%
As soon as I realize that my symptoms might be related to TB	64%	57%	89%	49%	46%	68%
I would not go to the doctor	3%	1%	3%	4%	12%	12%
If you would not go to the doctor, what is your reason?* Check all that apply.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Not sure where to go	2%					
Cost of health care service	40%	47%				
Do not trust health workers	23%	13%				
Do not like attitude of medical workers	17%					
Do not want to find out that something is really wrong	17%	13%				
Other	19%	40%				
*It was not reasonable to distribute to these groups of respondents because they are not numerous enough.						
With welfare, how expensive do you think TB diagnosis is in Ukraine?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Costs a lot of money, I can't afford it	25%	16%	7%	40%	45%	36%
It is rather expensive, but I'll find money if I have to	32%	15%	35%	26%	17%	2%
Not expensive	14%	20%	23%	4%	7%	12%
Free	12%	33%	17%	18%	16%	30%
Difficult to say	17%	16%	18%	12%	15%	20%
With welfare, how expensive do you think TB treatment is in Ukraine?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Costs a lot of money, I can't afford it	35%	22%	10%	50%	48%	46%
It is rather expensive, but I'll find money if I have to	42%	24%	63%	25%	17%	2%
Not expensive	4%	11%	8%	5%	4%	4%
Free	7%	26%	5%	9%	16%	20%
Difficult to say	12%	17%	14%	11%	15%	28%

Do you know people who have/had tuberculosis?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Yes	44%	42%	35%	60%	53%	48%
No	53%	52%	58%	38%	44%	26%
Difficult to say	3%	6%	7%	2%	3%	26%
What do you feel about people who have TB?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Compassion and desire to be of help	35%	31%	50%	36%	30%	0%
Compassion but I tend to stay away from these people	42%	44%	27%	37%	55%	60%
It is the problem of those individuals and can never happen to me	5%	5%	0%	0%	2%	6%
Fear (fear of being infected)	12%	15%	20%	20%	7%	28%
Other	1%	0.2%	2%	1%	0%	0%
Difficult to say	5%	5%	1%	6%	6%	6%
What sources have you consulted to learn about TB? Check all that apply.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Medical/specialized literature	19%	31%	23%	21%	4%	0%
Newspapers, magazines	37%	28%	45%	33%	17%	2%
Radio	27%	22%	52%	35%	18%	34%
Television	50%	43%	67%	56%	37%	30%
Brochures, posters, and other printed materials	15%	34%	8%	21%	1%	4%
Medical workers	37%	44%	32%	30%	32%	44%
Family, friends, neighbors, and colleagues	36%	26%	28%	29%	19%	12%
I don't remember	6%	7%	0%	0%	23%	34%
I have not seen any TB information	3%	6%	0%	0%	9%	16%
Other	3%	0.4%	3%	2%	0%	0%
What sources of TB information do you trust the most? Check a maximum of 2 options.	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Medical/specialized literature	34%	35%	22%	23%	15%	0%
Newspapers, magazines	16%	12%	15%	3%	9%	2%
Radio	11%	5%	12%	5%	10%	22%
Television	27%	20%	47%	15%	23%	28%
Billboards	1%	2%	20%	2%	0%	4%

Brochures, posters, and other printed materials	6%	22%	2%	6%	0%	6%
Medical workers	49%	44%	32%	54%	48%	64%
Family, friends, neighbors, and colleagues	14%	10%	18%	10%	16%	8%
I do not trust any sources	4%	6%	3%	7%	20%	28%
Other sources	1%	0.4%	0%	2%	1%	0%

HIV/AIDS: Human immunodeficiency virus/acquired immune deficiency syndrome.

Social demographics						
How old are you?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
18–29	23%	24%	37%	26%	7%	8%
30–44	25%	24%	47%	22%	21%	32%
45–59	25%	26%	13%	37%	21%	18%
Over 60	27%	26%	3%	15%	51%	42%
What is your gender?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Male	44%	45%	32%	15%	53%	34%
Female	56%	55%	68%	85%	47%	66%
What is your highest level of education?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Middle school	18%	8%	0%	8%	20%	12%
High school	27%	39%	17%	39%	36%	46%
College/vocational school	15%	28%	58%	31%	24%	34%
Higher education	40%	25%	25%	22%	20%	8%
Are you employed?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
Yes	55%	54%	98%	68%	21%	4%
No	45%	46%	2%	32%	79%	96%
What is your average monthly income?	Main sample		Open market vendors		Clients of charity canteens	
	2004	2006	2004	2006	2004	2006
I have no personal income	11%	7%	0%	3%	22%	2%
Under UAH200	33%	3%	7%	3%	60%	4%
UAH200–500	37%	37%	42%	38%	12%	94%
Over UAH500	15%	48%	23%	32%	3%	0%
Refuse to answer	4%	5%	28%	24%	3%	0%

UAH: Ukrainian currency (hryvnia).

Comparative analysis of data from exit surveys of TB outpatients at baseline and end-of-project

Support to Ukraine to Implement the National Tuberculosis Program was a three-year project that aimed to improve TB case detection and management in Kyiv City and Donetska Oblast. The project was managed by PATH with funding from the US Agency for International Development (USAID) and closely coordinated in Ukraine with the World Health Organization (WHO) and the KNCV Tuberculosis Foundation of the Netherlands. The project sought to expand the use of the internationally-recommended TB control strategy (DOTS) strategy to reduce the public health risk of TB.

During the initial phase of the project, the project team conducted a review of existing data and literature about vulnerable populations and held discussions with key informants. Formative research also was conducted, including focus group discussions with people living with HIV/AIDS. Findings from the formative research, together with the baseline exit survey data presented in this report, informed the development of a comprehensive behavior change communication (BCC) strategy, including development of educational messages, materials, and training for health care providers.

As part of the BCC work, PATH project staff designed an exit survey for patients leaving TB facilities, to evaluate satisfaction with their interactions with health care personnel. The goal of the survey was to collect baseline data on aspects of provider performance that could be improved through training in communication and counseling, and to measure changes in provider performance by administering the same survey at the end of the project.

The survey was administered in Kyiv City and Donetska Oblast. The baseline sample included 164 patients from 9 facilities in Donetska Oblast and 148 from 2 facilities in Kyiv City. The final survey included 201 individuals from the same 9 health facilities in Donetska Oblast and 111 individuals from the same 2 facilities in Kyiv City. Men represented 61 percent of the sample and women represented 39 percent.

The data collection instrument included 25 questions in a checklist format. The interviewers posed questions related to the patient's assessment of the interaction with the doctor on a scale of one to four (1 = "very dissatisfied," 2 = "not satisfied," 3 = "satisfied," and 4 = "very satisfied"). The questions were designed to evaluate the patient's views of the physician's ability to make them feel comfortable, provide support, listen effectively, and supply them with information about TB. The baseline exit survey aimed to identify aspects of client-provider communication that could be improved through provider training in interpersonal communication and counseling (IPC/C) skills.

From early 2004 to late 2006, PATH conducted 26 independent training sessions with a total of 374 participants from TB facilities in Kyiv City, Donetska Oblast, Dnipropetrovska Oblast, Zaporozhzhya, Kharkivska Oblast, and Sevastopol City. The training workshops focused on improving IPC/C techniques of providers. Themes covered included active listening skills, effective communication, counseling techniques for TB patients and TB patients who are also HIV-positive, TB-related stigma, and the importance of privacy and confidentiality. The

trainings used interactive methods including role plays, small group work, discussions, and practical exercises.

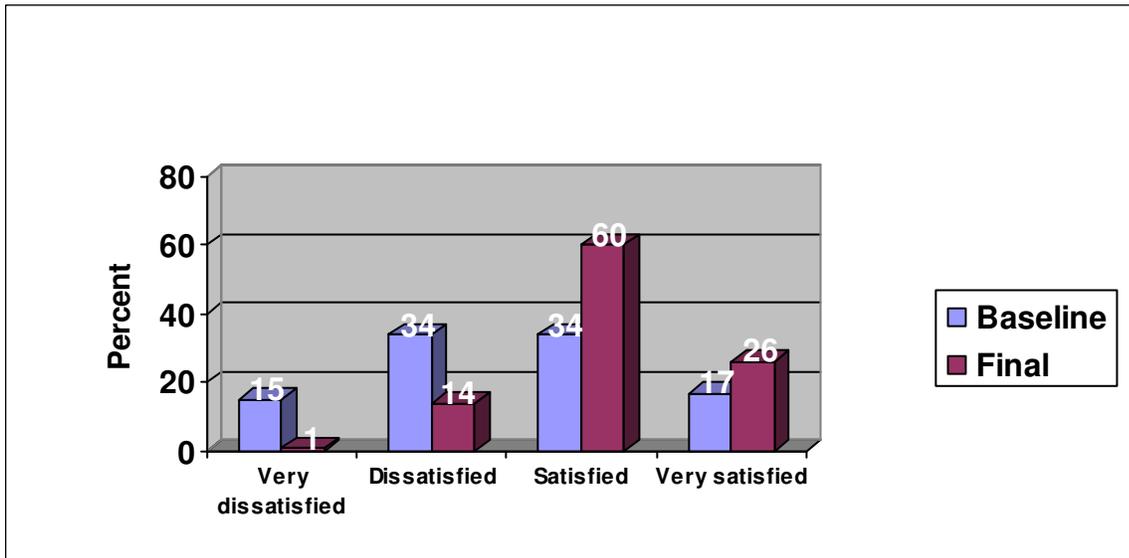
In addition to the trainings, PATH developed and distributed a colorful series of educational materials, including a 2-page brochure and 8-page booklet for the general public, a 12-page booklet for TB patients, and a poster for the general public. These materials were disseminated to TB providers, who were instructed to distribute them to patients. The posters were placed in public areas such as university campuses and community centers.

Analysis of the baseline and final survey data reflects a marked improvement in patient satisfaction with certain areas of provider IPC/C performance, including doctors' sensitivities to patients' concerns, doctors' explanations of TB and TB treatment options, and advice given to patients on how to talk with their families about TB. Several areas reflected stable or moderate improvement, such as doctors' willingness to make patients feel comfortable and doctors' expressions of empathy. Patient satisfaction with nurses' involvement was one of the areas where the final survey did not reflect positive change from the baseline. A summary of findings is presented below, including illustrative charts showing some of the positive outcomes of the project. A full discussion of results, including possible reasons for negative changes in satisfaction, is provided in the full report, which is available upon request.

Providing emotional support and comfort to patients

- At baseline, the majority of respondents (60 percent) said that they were satisfied with their doctor's ability or willingness to make them feel comfortable, and this indicator increased moderately to 70 percent in the final survey.
- Providers' ability or willingness to allow patients to share concerns and questions about their health increased dramatically over the life of the project. While at baseline, 51 percent of respondents said that they were either "satisfied" or "very satisfied," 86 percent of respondents said they were either "satisfied" or "very satisfied" in the final survey. Providers in Kyiv City made the most dramatic improvement in this area.
- Similarly, data reflect a marked increase in respondents' assessment of doctors' ability or willingness to understand their concerns. Forty-three percent of respondents were satisfied at baseline, while 63 percent were satisfied in the final survey.
- Overall, the majority of respondents stated that they were satisfied with their doctor's ability or willingness to express empathy. In Donetska Oblast, the percentage of respondents who said they were satisfied increased from 39 percent to 58 percent, whereas in Kyiv City, the data reflected a drop from 69 percent to 51 percent. The reasons for this negative change in Kyiv City are not known.
- At both baseline and follow-up, the majority of respondents were satisfied with their doctor's non-verbal communication (gestures, expressions, and eye contact). However, indicators in some areas of non-verbal communication dropped slightly in the final survey, although no significant difference in this measurement was found.

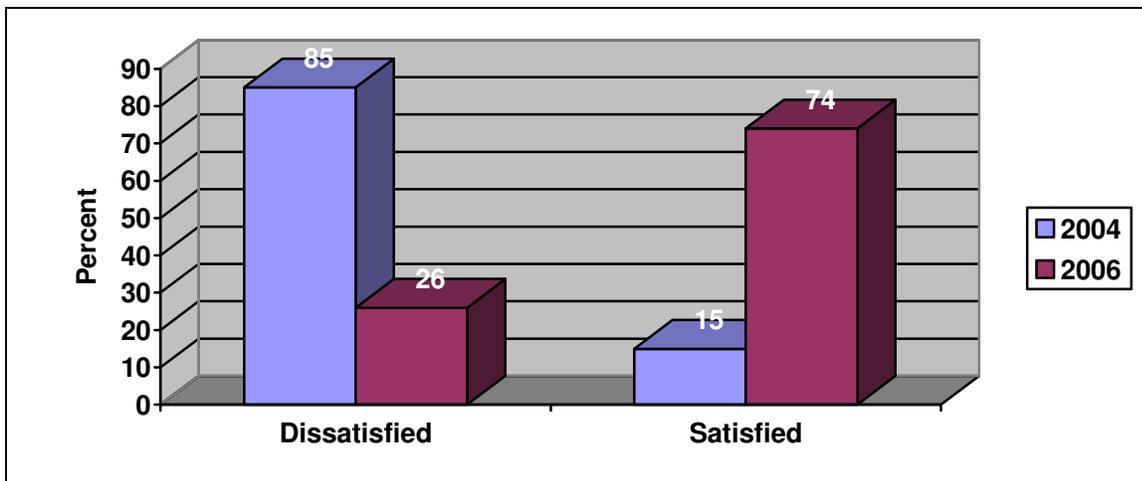
Figure B.1. Satisfaction with providers' willingness to allow clients to share health concerns.



Ensuring privacy and confidentiality

- Survey respondents' satisfaction with how doctors dealt with disruptions during their visits improved dramatically from 15 percent at baseline to 74 percent in the final survey.
- The majority of respondents said that the doctor's office provided acceptable privacy at both baseline and follow-up; however, this indicator decreased from 80 percent to 64 percent during the life of the project.
- Provider performance in ensuring patients of the confidentiality of their medical information improved from 21 percent to 42 percent. The increase was particularly dramatic in Kyiv City, where the percentage of respondents who stated that their physician informed them of confidentiality of their records increased from 2 percent at baseline to 33 percent in the final survey.

Figure B.2. Satisfaction with how providers dealt with disruptions during client visits.



Educating patients

- Patient satisfaction with providers' ability to explain health information in language that they understood increased dramatically. The percent responding that they were satisfied or very satisfied with this indicator increased from 51 percent to 88 percent.
- At baseline, only 33 percent of respondents were satisfied or very satisfied with their doctor's ability or willingness to explain the treatment options available to them. Participant responses changed dramatically over the life of the project, with 84 percent feeling satisfied or very satisfied in the final survey with the doctor's ability to explain treatment options to them.
- Similarly, respondents' impressions of the doctors' ability or willingness to provide them with advice about how to talk with their families about TB improved markedly from the baseline to the final survey. At baseline, only 31 percent were satisfied or very satisfied. In the final survey, 74 percent were satisfied or very satisfied.

Figure B.3. Satisfaction with providers' ability or willingness to explain TB treatment options.

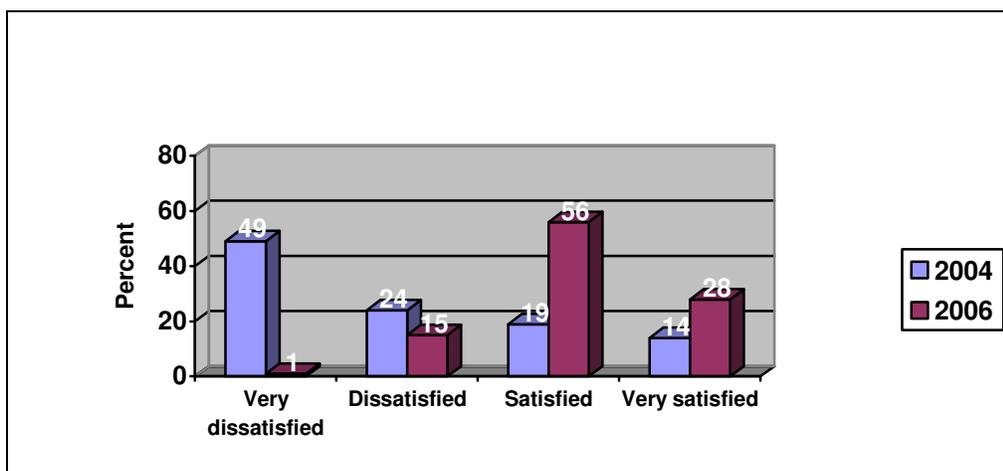
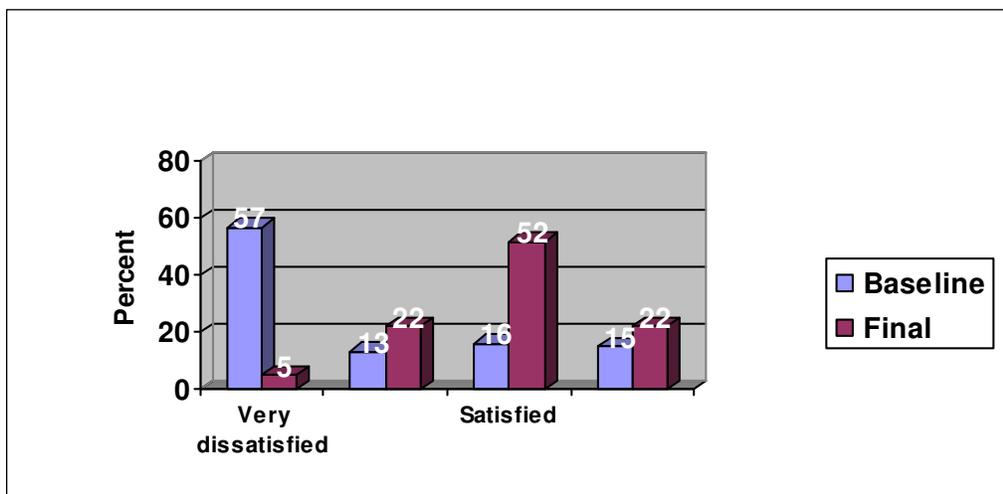


Figure B.4. Satisfaction with providers' ability or willingness to advise clients on talking to their families about TB.



Conclusion and recommendations

The exit survey data provide evidence of generally positive changes in TB patients' opinions about their interactions with providers from the baseline in 2004 to the final survey in 2006. Based on the data collected at baseline and the findings and observations of the interviewers during discussions with patients and TB medical providers, PATH led a series of training workshops developed to improve the IPC/C skills of TB doctors. The training emphasized skill-building in active listening, expressing sympathy, sharing of medical information in simple language, privacy and confidentiality, and how to communicate with a TB patient's family members. The net effect of the extensive provider training to improve client-provider interaction for TB-related care is positive, and the data point to areas that still need improvement. It will be important to compare these data with treatment outcome data for the same populations to determine if improvements in client-provider relationships have the anticipated positive effect on treatment completion.

Attachment C. Publications and presentations.

OBJECTIVE 1. Improve capacity for DOTS expansion within Ukraine (A. Tsarenko)

- 1.1. Cooperation between the MOH Ukraine and PATH on support to Ukraine in implementing its national program for TB control during 2002–2005 [PowerPoint presentation]. Presented at: National Symposium to Discuss Draft National TB Control Program for 2006–2010, May 2005; Kharkiv, Ukraine.
- 1.2. The role of PHC and family doctors in implementing DOTS strategy in the world and in Ukraine [PowerPoint presentation]. Presented at: National Congress of Family Doctors of Ukraine, October 2005; Kharkiv, Ukraine.
- 1.3. Support to Ukraine in implementing its national TB program project implementation plan [PowerPoint presentation]. Presented at: The First Project Stakeholders Meeting, March 2004; Kyiv, Ukraine.
- 1.4. Support to Ukraine in implementing its national TB program project implementation plan in Kyiv City [PowerPoint presentation]. Presented at: Kyiv City Health Administration Board Meeting, October 2004; Kyiv, Ukraine.
- 1.5. TB control political support and improvement of regulatory-legal base [PowerPoint presentation]. Presented at: The Second Project Stakeholders Roundtable Meeting, April 2005; Kyiv, Ukraine.
- 1.6. PATH. Support to Ukraine in implementing its national TB program; coordination of the project partners' activities [PowerPoint presentation]. Presented at: WHO Closing Conference, September 2005; Donetsk, Ukraine.
- 1.7. PATH. TB project progress and coordination with WHO TB project activities [PowerPoint presentation]. Presented at: WHO TB Project Coordinators Meeting, April 2005; Kyiv, Ukraine.
- 1.8. STOP TB. Strategy implementation in Ukraine [PowerPoint presentation]. Presented at: Sevastopol City Health Administration Board Meeting, July 2006; Sevastopol, Ukraine.
- 1.9. STOP TB. Strategy implementation in Ukraine [PowerPoint presentation]. Presented at: Kharkivska Oblast Health Administration Board Meeting, August 2006; Kharkivska, Ukraine.

OBJECTIVE 2. Improve the quality of TB diagnostic services in at least two oblasts (T. Ivanenko)

- 2.1. Improve the quality of TB diagnostic services [PowerPoint presentation]. Presented at: Stakeholders Working Group on DOTS Standards, October 2003; Kyiv, Ukraine.

- 2.2. Improve the quality of TB diagnostic services [PowerPoint presentation]. Presented at: Stakeholders Working Group for Developing Ukraine Lab QC and QA According to DOTS Standards, July 2004; Kyiv, Ukraine.
- 2.3. Organization of QC system of laboratory diagnostics in health facilities of penitentiary system according to the principles of DOTS strategy [PowerPoint presentation]. Presented at: The First Project Stakeholders Meeting, March 2004; Kyiv, Ukraine.
- 2.4. *Methodological Recommendations on Quality Control of Laboratory Diagnostics of TB by Z.N. Smear Microscopy*. Kyiv, Ukraine; 2004.
- 2.5. Assistance in development and implementation of quality control program for TB diagnostic services [PowerPoint presentation]. Presented at: Training on International Principles on TB Control: Lab Diagnosis, Management Surveillance, October 2005; London, United Kingdom.
- 2.6. Results of implementation of external quality control of smear microscopy in pilot oblast of Ukraine [PowerPoint presentation]. Presented at: MEASURE & USAID Workshop for European Region Countries on M&E for NTP, May 2006; Kyiv, Ukraine.
- 2.7. Methods of TB detection recommended by WHO and MOH of Ukraine in Sevastopol City [PowerPoint presentation]. Presented at: Sevastopol City Health Administration Board Meeting, July 2005; Sevastopol, Ukraine.
- 2.8. Improve the quality of TB diagnostic services in Kharkiv [PowerPoint presentation]. Presented at: Oblast Conference for TB Specialists, April 2006; Kharkiv, Ukraine.
- 2.9. Role of TB laboratory diagnostic services in NTP and QC [PowerPoint presentation]. Presented at: Oblast Conference for TB Specialists, April 2006; Dnipropetrovsk, Ukraine.
- 2.10. *Laboratory TB Diagnostic in Clinical Laboratories Using the Method of Smear Microscopy (manual for the lab specialists)*. Geneva, Switzerland: WHO European Region; 2006.

OBJECTIVE 3. Improve use of monitoring and surveillance data for TB program management (A. Dadu)

- 3.1. MIS concept for Ukraine NTP [PowerPoint presentation]. Presented at: Stakeholders Working Group for Developing Ukraine MIS According to DOTS Standards, October 2003; Kyiv, Ukraine.
- 3.2. Electronic tool for TB MIS for PATH TB project [PowerPoint presentation]. Presented at: Stakeholders Working Group for Developing of Ukraine MIS According to DOTS Standards, July 2004; Kyiv, Ukraine.

- 3.3. Overview of surveillance systems for TB control programs used in the world and presentation of the Ukraine TB MIS concept [PowerPoint presentation]. Presented at: The First Project Stakeholders Meeting, March 2004; Kyiv, Ukraine.
- 3.4. TB in Ukraine: strengthening the TB control program. *Journal of Preventive Medicine of Ukraine, SES*. 2005; #5:52–55.
- 3.5. *Guidelines for Monitoring and Evaluation of Ukraine National TB Program*. Kyiv, Ukraine; 2006.
- 3.6. Use of cohort analysis as a tool for monitoring and evaluation of the national TB program [PowerPoint presentation]. Presented at: PATH's Global TB Team Meeting, April 2006.
- 3.7. Implementation of TB management information system in Ukraine [PowerPoint presentation]. Presented at: MEASURE & USAID Workshop for European Region Countries on M&E for NTP, May 2006; Kyiv, Ukraine.
- 3.8. Results of NTP 2002–2005 evaluation mission to Ukraine [PowerPoint presentation]. Presented at: Working Group with Participation of Local NGOs on Defining TB/HIV Policy, May 2006.
- 3.9. Planning of TB/HIV collaborative activities in Ukraine [PowerPoint presentation]. Presented at: Ukraine MOH Working Group on Submitting Application to Round 6 of GFATM, June 2006; Kyiv, Ukraine.
- 3.10. Implementation of cohort analysis of TB diagnosis and treatment efficiency in Sevastopol City [PowerPoint presentation]. Presented at: Ukraine TB Service for Year 2005, July 2006.
- 3.11. Using of cohort analysis for evaluation of TB service efficiency in Sevastopol City [PowerPoint presentation]. Presented at: Sevastopol City Health Administration Board Meeting, July 2006; Sevastopol, Ukraine.
- 3.12. Evaluation of Kharkivska Oblast TB control program by using new TB indicators, TB epidemiological and economical burden [PowerPoint presentation]. Presented at: Kharkivska Oblast Health Administration Board Meeting, August 2006; Kharkiv, Ukraine.

OBJECTIVE 4. Reduce diagnostic delay, increase case detection, and improve adherence to TB treatment (K. Gamazina, N. Zaika, A. Bishop)

K. Gamazina

- 4.1. Overview of PATH's planned activities in the framework of DOTS expansion in additional oblasts of Ukraine [PowerPoint presentation]. Presented at: Introduction of STOP TB Strategy, March 2006; Donetsk, Ukraine.

- 4.2. Overview of the planned activities of the USAID/PATH project TB control partners [PowerPoint presentation]. Presented at: Conference for General Health Care Managers and Specialists, April 2006; Dneprodzerzhynsk, Ukraine.
- 4.3. STOP TB Strategy: main aspects and its implementation in Ukraine [PowerPoint presentation]. Presented at: Workshop for Professors of Kyiv National Medical University TB and Family Health Departments, May 2006; Kyiv, Ukraine.
- 4.4. Training strategy of the PATH TB program in Ukraine [PowerPoint presentation]. Presented at: WHO/EURO Collaborative Meeting, November 2005; Copenhagen, Denmark.
- 4.5. Behavior change communication: baseline formative research results and proposed activities [PowerPoint presentation]. Presented at: The Launch Project Stakeholders Meeting, March 2004; Kyiv, Ukraine.

N. Zaika

- 4.6. Informational and educational support and training implementation [PowerPoint presentation]. Presented at: TB Project Coordinators Meeting, March 2006; Kyiv, Ukraine.
- 4.7. Effective communications as a consulting tool [PowerPoint presentation]. Presented at: TB Project Coordinators Meeting, March 2006; Kyiv, Ukraine.
- 4.8. Role of interpersonal communication and counseling skills in increasing patient satisfaction in the quality of care [PowerPoint presentation]. Presented at: WHO/EURO Collaborative Meeting, April 2005; Copenhagen, Denmark.
- 4.9. Informational and educational support and training [PowerPoint presentation]. Presented at: The Second Project Stakeholders Roundtable Meeting, April 2005; Kyiv, Ukraine.

A. Bishop

- 4.10 Policy, practice, and the role of stigma in the prevention and management of TB/HIV co-infection in Ukraine. Presented at: IUATLD Conference, 2005; Paris, France.

OBJECTIVE 5. Improve provider practices by strengthening provider capacity to diagnose and treat TB based on DOTS (O. Klochkov)

- 5.1. DOTS implementation trainings for TB and PHC specialists [PowerPoint presentation]. Presented at: Sevastopol City Health Administration Board Meeting, July 2006; Sevastopol, Ukraine.
- 5.2. DOTS implementation trainings for TB and PHC specialists [PowerPoint presentation]. Presented at: Kharkivska Oblast Health Administration Board Meeting, August 2006; Kharkivska, Ukraine.

- 5.3. Results of implementating the PATH project on support to Ukraine in implementing its national program for TB control in Donetska Oblast during 2002–2005 [PowerPoint presentation]. Presented at: National Symposium to Discuss Draft of the National TB Control Program for 2006–2010, May 2005; Kharkiv, Ukraine.
- 5.4. Advancing TB control skills of health staff [PowerPoint presentation]. Presented at: The Second Project Stakeholders Meeting, April 2005; Kyiv, Ukraine.
- 5.5. DOTS is an effective TB control strategy; DOTS implementation in the world and in Ukraine [PowerPoint presentation]. Presented at: Dnipropetrovska Oblast Conference for TB Specialists, April 2006; Dneprodzerzhynsk, Ukraine.
- 5.6. The role of PHC and family doctors in DOTS strategy implementation in Donetska Oblast [PowerPoint presentation]. Presented at: Dnipropetrovska Oblast Conference for TB Specialists, April 2006; Dneprodzerzhynsk, Ukraine.

Attachment D. Evaluation team members.

Name	Title
Dr. Fabio Luelmo	Tuberculosis Control Expert, external consultant
Dr. Kateryna Gamazina	PATH Ukraine Country Director, Ukraine
Ms. D’Arcy Richardson	PATH Tuberculosis Technical Director, Washington, DC
Dr. Anatoliy Tsarenko	PATH Tuberculosis Advocacy Specialist, Ukraine
Dr. Tamara Ivanenko	PATH Tuberculosis Laboratory Specialist, Ukraine
Dr. Andrei Dadu	PATH Tuberculosis Management Information System Specialist, Ukraine
Dr. Natalia Zaika	PATH Tuberculosis Behavior Change Communication Specialist, Ukraine

Attachment E. Areas and institutions visited and persons interviewed.

Institution	Contact person	Title
Central Level		
Institute of Tuberculosis and Pulmonology Laboratory	Dr. Yuriy Feschenko	Director and Chief TB Specialist, MOH
USAID/Kyiv	Dr. Nancy Godfrey	Director, Office of Health and Social Transition
WHO/Ukraine	Dr. Kestutis Miskinis	Medical Advisor, WHO Office for TB Control
Kyiv City		
Kyiv City Health Administration	Dr. Valeriy Pischykov	Deputy Head
Kyiv City Central TB Dispensary	Dr. Leonid Turchenko	Chief Doctor
	Dr. Natalia Filonenko	Deputy Chief Doctor
	Dr. Lyubov Kobyscha	Deputy Chief Doctor
	Dr. Natalia Goncharenko	Head Microbiological Laboratory
Donetska Oblast		
Donetska Oblast Health Administration	Dr. Oleksandr Anischenko	Head
	Dr. Svitlana Lepshyna	Chief TB Specialist
Donetska Oblast TB Dispensary	Dr. Svitlana Svitlychna	Chief Doctor
	Dr. Anna Kovalyova	Deputy Chief Doctor
	Dr. Olena Yann	Head Microbiological Laboratory
Donetska Oblast Red Cross	Ms. Lyudmila Avsiankina	Head
Donetsk City TB Dispensary	Dr. Oleksandr Klochkov	Chief Doctor
	Dr. Irina Ischenko	Deputy Chief Doctor
	Dr. Ludmila Balabanova	Head of the TB Laboratory
Gorlovka City TB Dispensary	Dr. Volodymyr Mozgovyy	Chief TB Specialist
	Ms. Ludmila Pozhidaeva	Head Microbiological Laboratory
	Dr. A. Martinova	TB Specialist
	Dr. E. Lychenko	Chief Doctor
Dnipropetrovska Oblast		
Dnipropetrovska Oblast TB Dispensary	Dr. Dmytro Kryzhanovskiy	Chief Doctor
	Dr. Oksana Parkhomenko	Statistic Department Head
	Ms. Maria Fonaryova	Head Microbiological Laboratory
Dnipropetrovsk City TB Dispensary	Dr. Nadiya Ivanova	Chief Doctor
	Dr. Victoria Yalenko	Chief Doctor
	Dr. Inna Motrich	Statistic Department Head
Dnipropetrovska Oblast Prison Administration	Dr. Petro Popov	Deputy Head
Dnipropetrovsk Prison TB Hospital #89	Dr. Oleksandr Kopylenko	TB Department Head
	Dr. Alevtina Veredyk	Head Microbiological Laboratory
Dnipropetrovska Oblast HIV/AIDS Center	Dr. Nikolay Turchin	Chief Doctor
Dniprodzerzhynsk City Health Administration	Dr. Elena Saus	Acting Head

Institution	Contact person	Title
Dnipropetrovska Oblast (continued)		
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	Dr. Lubov Bugaeva	Head Microbiological Laboratory
Dniprodzerzhynsk City Hospital #7	Dr. Nataliya Synegina	Deputy Chief Doctor
	Dr. Alla Drobina	Laboratory Head
Sinelnikovo Central Rayon Hospital	Dr. Petro Dovgan	Chief Doctor
	Dr. Tamila Ryabovol	Chief TB Specialist
	Dr. Elena Grechko	Deputy Chief Doctor
	Ms. Valentina Shinkarenko	Laboratory Head
Kharkivska Oblast		
Kharkivska Oblast Health Administration	Dr. Galina Sirosthan	Deputy Head
Kharkivska Oblast TB Dispensary #1	Dr. Tetyana Sencheva	Chief Doctor
	Dr. Taisiya Kovalyova	Deputy Chief Doctor
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Kharkiv Medical Post-Graduate Academy	Prof. Valeriy Kut'ko	TB Department Head
	Dr. Petro Poteyko	Associate Professor
Kharkivska Oblast TB Hospital #1	Dr. Tetyana Synenko	Deputy Chief Doctor
	Dr. Anatoliiy Torbenko	TB Department Head
	Ms. Lyudmyla Dyadchenko	DOTS Nurse
Kharkiv City TB Dispensary	Dr. Natalia Varnavskay	Deputy Chief Doctor
	Dr. Olga Sharapova	TB Department Head
	Dr. Suslo Galina	Deputy Chief Doctor
	Dr. Kuzmina Irina	TB Department Head
Kharkivska Oblast TB Dispensary #4	Dr. Olga Maksymenko	Chief Doctor
	Dr. Svitlana Maksymenko	MDR TB Department Head
	Dr. Volodymyr Kochkin	Deputy Chief Doctor
	Tetyana Shevtsova	Head Microbiological Laboratory
Lozova Central Rayon Hospital	Dr. Natalia Andreenko	Chief Doctor
	Dr. Vasyl	Chief Doctor
	Dr. Yriy Petrenko	Lozova City Deputy Mayor
	Dr. Ivan Zhovtuy	Chief Doctor
	Dr. Vladimir Karpenko	Deputy Chief Doctor
	Dr. Valeriy Zakrevskiy	Deputy Chief Doctor
	Dr. Elena Tsiganenko	Head of Family Medicine
	Ms. Tatiana Trofimova	Head of Family Medicine

Attachment F. Evaluation assessment methodology.

The team used the following methods to evaluate project outcomes by objective:

Objective 1: Improve capacity for directly observed therapy, short course (DOTS) expansion by advocating for political support, including appropriate legislation and assistance in developing pilot sites.

- Review of current tuberculosis (TB)-related legislation.
- Policymaker surveys—comparison of baseline and final results.
- Interviews with national- and oblast-level officials.
- Discussions with partners and donors.

Objective 2: Improve the quality of diagnostic services in selected oblasts.

- Site visits to laboratories.
- Review of laboratory records.
- Review of quality control documentation.
- Interviews with laboratory personnel.

Objective 3: Improve the use of monitoring and surveillance data for TB program management.

- Site visit to training facility.
- Review of cohort data.
- Interviews with oblast, rayon, and city data managers.

Objective 4: Reduce diagnostic delay, increase case detection, and improve treatment adherence.

- Baseline and final knowledge, attitudes, and practices surveys.
- Analysis of cohort data.
- Review of data from pilot Ukrainian Red Cross Society (URCS) intervention.
- Review of information, education, and communications materials produced during project.
- Interviews with URCS staff.

Objective 5: Improve provider practices by improving capacity to diagnose and treat TB based on the DOTS strategy, and enhance knowledge and response to TB/human immunodeficiency virus interaction.

- Patient exit interview results—comparison of baseline and final results.
- Review of training summary.
- Interviews with providers.

Attachment G. Updated project data sheet.

Final Report Submission: December 31, 2006

PATH

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Project Information

Project description	“Support to Ukraine to Implement the National Tuberculosis Program.” This project aimed to improve the capacity for directly observed therapy, short course (DOTS) strategy expansion by advocating for political support; strengthening tuberculosis (TB) diagnostic capacity and quality control (QC) procedures for smear microscopy, culture, and drug sensitivity testing; strengthening TB surveillance capacity; improving provider capacity; and increasing public awareness and patient support.
Partners	Ministry of Health (MOH) of Ukraine; F.G Yanovsky Institute of Tuberculosis and Pulmonology of Academy of Medical Sciences of Ukraine; Kyiv and Sevastopol City Health Administrations; Kyiv and Sevastopol City TB Dispensaries; Donetska, Dnipropetrovska, and Kharkivska Oblast Health Administrations; Donetska, Dnipropetrovska, and Kharkivska Oblast TB Dispensaries; Kyiv and Sevastopol City Centers of Health and Sanitary Epidemiological Stations; Donetska, Dnipropetrovska, and Kharkivska Oblast Health Centers and Sanitary Epidemiological Stations; World Health Organization Office for TB

	Control in Ukraine; KNCV Tuberculosis Foundation (Netherlands)/ Royal Tropical Institute of Netherlands; World Bank TB/HIV/AIDS [human immunodeficiency virus/acquired immune deficiency syndrome] Control Project; Ukrainian Red Cross Society; Ukrainian National Council for Advocacy and Safety of Patients; Medical Information and Analytic Center, “Vector” (Kyiv City nongovernmental organization [NGO]); NGO center, “Health of Region” (Donetska Oblast).
Project location	Donetska, Dnipropetrovska, and Kharkivska Oblasts and Kyiv and Sevastopol Cities

Grant Funding Information

USAID funding (USD)	\$2.5 million (includes \$1 million add-on from the USAID Regional Mission for Ukraine, Belarus, and Moldova in Kyiv, Ukraine)	PVO match (USD)	\$637,333
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Target Beneficiaries

Type	Number
New TB patients (and their families) in project sites	Approximately 11,660 new TB patients per year (about 30 percent of total TB patients in Ukraine)

Beneficiary Residence

Urban/Semi-Urban percent	Rural percent
Approximately 80 percent	Approximately 20 percent

General Strategies Planned

- Advocated for health legislation reform.
- Promoted consensus-building on design and implementation of a revised TB surveillance system.
- Provided training and ongoing support to Level I and II laboratories.
- Designed and introduced a quality assurance (QA) program for TB diagnosis.
- Collaborated with national and international TB program implementers.
- Disseminated essential, up-to-date TB literature.
- Designed and implemented a comprehensive behavior change approach aimed at health care providers, TB patients, the general public, and selected populations at risk.

M&E Assessment Strategies

- Cohort analyses.
- Laboratory panel testing.
- Surveillance data monitoring.
- Knowledge, practices, and coverage surveys.
- Health facility assessments.
- Pre- and post-training questionnaires.
- Exit interviews.
- Focus group discussions.

Behavior Change Communication Strategies

- Television and radio spots aimed at the general public.
- Educational materials for patients, families, and the public.
- Job aids for health workers.
- Training to improve client-TB provider interaction.
- Dissemination of evidence in support of technical norms.

Capacity-Building Targets Planned

PVO	Non-Govt Partners	Other Private Sector	Government	Community
--	--	--	National and regional MOH health facility staff	--

Interventions

Policy/advocacy reform

- Convened policy and advocacy consultative group to advise governmental partners on legislative reform.
- Monitored legislative development related to TB control.
- Distributed and facilitate access to key technical literature on TB control.
- Convened at least two national technical symposia for TB authorities and specialists.
- Conducted baseline and follow-up policymaker survey.

Laboratory strengthening

- Convened working group on TB laboratory QA and QC in Donetska Oblast and expansion oblasts.
- Designed QA and QC systems that support all laboratory levels.
- Developed training curricula and methodological recommendations regarding QA and QC of smear microscopy for TB diagnosis.
- Introduced QC of direct smear microscopy in Level I laboratories of the general health care system in Donetska Oblast starting project year 1, and in

Dnipropetrovska and Kharkivska Oblasts and Kyiv and Sevastopol Cities in years 2 and 3.

- Introduced interlaboratory QC of smear microscopy in Level I and II laboratories in Donetsk Oblast during project years 1, 2, and 3, and in Dnipropetrovska and Kharkivska Oblasts, Kyiv and Sevastopol Cities in years 2 and 3.
- Introduced an electronic system of surveillance of multi-drug resistant forms of TB within the context of the pilot project being implemented in Donetsk Oblast and Kyiv City.

TB surveillance strengthening

- Revised, tested, introduced, and monitored use of recording and reporting forms and guidelines in collaboration with all stakeholders.
- Conducted training on use of new recording and reporting forms in all five regions.
- Designed, tested, introduced, and monitored use of electronic version of the TB management information system.
- Conducted training on the use of data for problem identification, program monitoring, and strategic planning.

Behavior change

- Conducted training in information, education, and communications materials development.
- Revised existing and develop additional print materials on TB for patients, families, populations at risk, and the general public in Kyiv and Sevastopol Cities and Donetsk, Dnipropetrovska, and Kharkivska Oblasts.
- Revised and re-broadcasted television and radio spots aimed at the general public in Kyiv and Sevastopol Cities and Donetsk, Dnipropetrovska, and Kharkivska Oblasts.
- Expanded existing curriculum and implemented training for TB providers to improve counseling and communication skills and incorporate HIV voluntary counseling and testing.
- Investigated and documented factors affecting patient health-seeking behavior and adherence to treatment.
- Undertook baseline and follow-up knowledge, attitudes, and practices surveys.

Health care providers' skills strengthening

- Improved provider practices by strengthening provider capacity to diagnose and treat TB based on DOTS.
- Improved systems to support appropriate referral of TB cases.
- Enhanced knowledge of and response to TB/HIV interaction, with emphasis on appropriate counseling and client-provider interaction with emerging populations at risk.
- Improved patient satisfaction with TB specialists.
- Improved support to patients during continuation phase of treatment.

Attachment H. Field observation notes

Kharkivska Oblast

Population 2.8 million; capital, Kharkiv City, with 1.4 million. The oblast has 28 rayons. 34,000 tuberculosis (TB) cases are registered as “in control,” of which, 5,584 are active TB. This control after cure represents a substantial cost and workload for the program, with limited benefits, and is contrary to current international policy.⁵ As with all of Ukraine, total reported cases in Kharkivska Oblast increased until 2002 (prisons were included at that time), then there was a reduction in the oblast to 90.5 per 100,000 in 2005. The incidence of all pulmonary TB diminished from 96.8 per 100,000 in 2002 to 89.9 per 100,000 in 2005, while confirmed cases (smear and culture) increased from 29.8 to 30.9 per 100,000. This indicates a slight improvement in diagnostic quality (cases confirmed by smear or culture increased from 30.8 to 34.4 percent, still well below international standards). Deaths during TB treatment are high (over 10 percent of the cohort), most in older ages (40 to 60 years). This is likely not attributable to the human immunodeficiency virus (HIV) but possibly due to late diagnosis. Other pathologies cannot be excluded. The long-term follow-up after TB cure typical of the Soviet system increases the number of deaths attributed to TB in cured cases.

There are 45 microscopy centers. Total smears increased from 22,600 in 1999 to 211,000 in 2004 and 208,000 in 2005 (equivalent to about 60,000 suspects examined for diagnosis, or two percent of the population). No data on TB suspects examined for diagnosis are available. The positivity of examined smears is quite low, varying from 0.5 to 2.5 percent. It increased initially and has decreased lately. External quality assurance (EQA) is done only through the panel system, both at a distance and during direct supervision. Laboratory training for microscopists is done in one week, with a minimum practice of five slides processed by each trainee. In general, laboratory equipment is old (monocular microscopes) and poorly maintained. The central laboratory is now receiving a second fluorescence microscope (two in the oblast). The average microscopy load is about 10 to 12 smears per reader per day, well within limits for light microscopy for the moment, with no need for expansion of fluorescence.

Recording and reporting of TB is as per PATH and now per national norms—national forms are considered more complex and less user-friendly. There is no report on treatment outcome so far, but there are data on smear conversion at two and three months. Conversion at three months is 65 percent. Major reasons for non-conversion are death (>10 percent), default (>10 percent), and failure attributed to drug resistance (>10 percent), with a small number of transfers.

Case detection takes place in general health care (GHC) facilities on suspicion by physicians (only), and in specialized dispensaries through self-referral. All cases must be confirmed by a TB specialist, and are hospitalized. About one percent of adult outpatients in GHC facilities are requested to submit sputa for examination (three samples). Positivity is low (about one percent), so no additional screening is recommended. In specialized facilities, the positivity is greater than ten percent, with a high proportion of suspects providing only one sample. Patients who are not mobile send samples from home.

⁵ International Standards of TB Care.

Treatment in hospitals is under direct observation. In one TB hospital without an outpatient department, a high proportion of smears to monitor treatment were highly positive, in spite of the use of the directly observed therapy, short course (DOTS) regimen, suggesting low efficacy of regimens (new, re-treatment, and chronics). Regimens with four or five initial drugs daily are selected based on clinical criteria (according to severity of lesions). There is little use of national standard regimens, and DOTS in the continuation phase is rare. Drugs are received from the national level, and the quality of drugs is not tested. Drug supplies were irregular until recently. Supply of first-line drugs from the national level was irregular in at least one rayon, and drug side effects were noted. Second-line drugs are used for failure cases and patients with multi-drug resistant (MDR) TB detected on initial culture, but supplies are irregular. HIV testing is systematic, and co-infected patients are referred to a central hospital. Important differences were observed among rayons, with some doing self-administered treatment in the continuation phase (drugs to patient for 2–4 weeks) and others using intermittent DOTS at the village level, with a one-month supply at the health center (gradual implementation of the strategy).

The Ukrainian Red Cross Society (URCS) provides important support to recover defaulters, supply drugs to patients, and maintain patients on treatment.

Mass tuberculin screening of children is done annually (according to national regulations), and TB infection is diagnosed on the basis of either the reaction size or an increase of 6mm from a previous test. As Bacillus of Calmette and Guerin (BCG) is given at birth and repeated several times, this testing probably overestimates children's natural infection. A more effective use of resources would be to concentrate on children in contact with known TB patients.

PATH activities were considered very useful by the oblast authorities and staff, particularly with regard to training and provision of information (there is very little access to the Internet in the medical profession). Contact between PATH and the authorities is good at all levels of the system.

Recommendations:

- To the oblast: Establish supervision to ensure compliance with standard regimens, as per national order (*prikaz*).
- To the national level: Eliminate old *prikazes* that contradict current policy.
- To PATH: Train new supervisors on the key elements of monitoring program quality, and establish quality control of TB drugs.

Donetska Oblast

Pilot DOTS project since 2001 supported by the World Health Organization (WHO), and later, PATH, with data available from several years. HIV infection in a survey of TB patients (March 2006) is 16 percent, with a higher proportion in prisons than in the general population.

There is gradual integration and acceptance of the new DOTS strategy by specialists. In one TB dispensary (Gorlivka City, covering three rayons), detection of suspects in primary health care (PHC) facilities increased from 0.3 to 2.4 percent in four years. The city has a line item in the budget for TB and supports incentives to patients at end of treatment. MDR TB patients have a

17 percent failure rate—they are excluded from analysis, so cohort data are not strictly comparable to international data.

Laboratory EQA is done through panel testing and apparently satisfactory. However, observation of laboratory records showed suspect results (>20 percent scanty among positives; high proportion of new patients with only one or two scanty results; scanty result with negative culture; one patient smear and culture negative but treated as an MDR TB case with second-line drugs on the basis of resistance in a bronchial washing). It is essential to implement EQA through re-reading of slides to increase quality and confidence of specialists in the results.

Diagnosis based only on clinical and radiological evidence seems very high (over-diagnosis), particularly in re-treatments, where X-ray abnormalities should be expected. Changes of treatment based only on initial drug susceptibility testing, without consideration of patient evolution and smear conversion, is frequent. Even with very good EQA of the laboratory, this may not be the best action for the patient.

Major advances are gradual changes in the knowledge, attitudes, and practices (KAP) of the staff, improvement of integration into PHC facilities, strong involvement of the local authorities in the TB program, use of data from the information system for monitoring (not seen in previous visit), reduction of TB deaths, incentives to patients to reduce default, increase of ambulatory treatment with DOTS, improvement in treatment success, and active support from the URCS.

Recommendations:

- To the oblast: Continue expansion to 100 percent of the health facilities and feldshers, and implement EQA of microscopy through re-reading of slides and analysis (periodic medical audit by peers in each hospital) of the diagnosis of active TB in previously treated patients.
- To the national level: Eliminate *prikazes* mandating mass screening by X-ray or tuberculin; reduce BCG re-vaccination; implement EQA of TB drugs; and activate and use the Global Drug Facility grant of fixed-dose drug combinations, pending for more than one year.
- To PATH (and WHO): Expand the experience to other oblasts.

Dnipropetrovska Oblast

The population is 3.5 million in 22 rayons and 4 large cities. Support is provided by PATH (3 rayons) and WHO. In 2005, there were approximately 44,000 TB cases “in control,” of which, about 10,000 were active cases, managed by 6 TB dispensaries, 1 TB hospital, 8 TB sanatoria, 7 TB departments in GHC facilities, and 43 outpatient departments in PHC facilities, plus ambulatory centers.

Beds are increasing in wards of general hospitals and in the central TB dispensary, and diminishing in other TB hospitals. Incidence excluding prisons stabilized in 2005 (82 per 100,000) and increased in 2006. Confirmed incidence increased in the oblast (25.6) and in the city (18 per 100,000); however, the proportion of confirmed cases is still very low, indicating high clinical and radiological diagnosis, with probable large over-diagnosis. The proportion of the population covered by the new strategy has increased from 2005 (estimated 35 percent) to

2006 (estimated 55 percent), and the detection of suspects in PHC facilities has more than doubled.

There was an intensive training program (17 trainings for 372 specialists and nurses), including the URCS. The duration of hospitalization has diminished. There is substantial progress in incorporation of TB control in GHC facilities. Implementation of the new protocols/guidelines was observed in one rayon. Sputum smear conversion has increased. Coordination with, and implementation of the strategy in the prison system (12,000 inmates), is in progress.

Duration of hospitalization remains very long, even in smear-negative and extra-pulmonary cases. The TB hospital is being used for social support—at a very high cost—there are better methods to help the poor, both with and without TB.

PATH has concentrated on training, monitoring, and the electronic data network. The main obstacle is changing the KAP of the old cadre of TB specialists. However, there is good acceptance of PATH cooperation at all levels.

The AIDS center was visited. Originally, transmission was primarily through sexual contact, then through intravenous drug use. Recently, the proportion of intravenous drug users has diminished (50 percent), sexual transmission has increased (30 percent), and vertical transmission is about 15 percent. There is good coordination with the oblast TB dispensary. The AIDS central unit carries out TB diagnosis (X-ray department in the AIDS hospital); cases in doubt are referred to the TB dispensary. No antiretroviral treatments (ARVs) are provided to TB patients in the first four months of TB treatment, even if hospitalized, following a 2004 protocol (#580). One reason is fear of side effects (in TB, called paradoxical reaction; in HIV, called reconstitution syndrome). There is a project supported by Global Fund to Fight AIDS, Tuberculosis and Malaria funding. There are five centers for over three million population, so the distances are very far for patients to travel. ARV presentation is in patient boxes with day envelopes (better than in TB), and several strategies have been tried to increase compliance. TB preventive therapy is used (two drugs) and co-trimoxazole preventive therapy is used in children.

Recommendations:

- To the oblast: Establish monitoring of diagnostic quality by specialists through peer discussion of criteria for deciding diagnosis of active TB (brief presentation of history of cases in treatment and peer discussion) as routine training activity. Monitor changes in staff and immediately train successors (observed deterioration of records in one laboratory). Reduce the duration of hospitalization, review the guidelines for intake and release of patients, and monitor implementation.
- To the national level: Review guidelines for treatment of TB/HIV, including use of ARVs and current procedural terminology. Develop EQA for TB drugs.
- To PATH: Support visits by selected specialists (from Kyiv City or external) to discuss clinical criteria for diagnosis and use of culture in smear-negative cases. Disseminate the *International Standards of TB Care* in Russian, and *Toman's Tuberculosis* when available. Support implementation of laboratory EQA by re-reading of slides.

Kyiv City

Kyiv City has a population of more than 2.6 million. The city itself is about 400,000, but as a work center, it receives a large number of commuters. This alters the incidence estimates based on notification. TB control is under an independent division and includes TB dispensaries and two TB hospitals. There are ten rayons with respective TB coordinators. For the city, an interdepartmental commission meets quarterly for program monitoring. Kyiv City has a supply of drugs independent from the national level. Case detection has been integrated into general hospitals.

The reported TB incidence was 45.9 per 100,000 in 2005, compared with 84.1 for Ukraine, and it has diminished since 2004 (48.1). Part of the difference may be due to a lower proportion of over-diagnosis and more reliance on microscopy for diagnosis in Kyiv City. New smear-positive TB represents 57 percent of the cases, with an incidence of 26.4, compared to 37 percent in Ukraine (incidence 31.1 per 100,000).

HIV prevalence in TB cases is growing, from 6.2 percent in 2002 to 10.5 percent in 2004. TB incidence in HIV-infected persons “under control” reaches 60 percent. TB mortality was 11.8 per 100,000 in 2005 (including TB history or autopsy, with an increasing proportion in the homeless population).

MDR TB is estimated as frequent, but data are not reliable. Technical support was received from the KNCV Tuberculosis Foundation, and later, from PATH, with external financial support from the European Union, and later, from the US Agency for International Development through PATH. There is very good collaboration and coordination with the local Red Cross.

A large proportion of the funding is still used for mass activities of little impact, such as tuberculin skin testing and radiological screening and BCG re-vaccination (approximately \$3 million versus \$4 million for TB facilities per year). In 2005, 1.5 million mass X-rays resulted in 431 TB cases diagnosed, 159 of them “severe,” at a cost of about US\$14,000 per infectious case discovered. This compares with about US\$30 to discover an infectious case in a high-risk group. The experience of Kyiv City highlights the importance of redefining risk groups and reviewing obsolete practices and regulations for the country. This information is not well-known at either the national or oblast level, or shared by the political decision-makers.

The laboratory network has 34 Level I laboratories, 30 with microscopy (26 in GHC facilities and 4 in TB facilities), 3 Level II laboratories, and 1 Level III laboratory. EQA is by panel testing (blind re-checking was recommended, as it is much more representative of real work). The number of suspects examined has decreased from 2001 (32,000) to 2005 (16,800), and the proportion of cases detected by polyclinics has increased from 31 percent to 45 percent. The positivity rate has increased from 0.5 to 2 percent. Training achieved substantial improvements in results between 2004 and 2005; however, periodic re-training activities for new staff and refresher courses are required.

Data are computerized. With 1,268 patients on treatment, 376 are on DOTS, 385 on self-administered treatment, and 104 have defaulted. The city provides incentives for treatment compliance. However, the results of sputum conversion (available only since the first quarter of

2006) show relatively poor treatment results compared with the diagnostic quality. Different treatment regimens, a low proportion of patients on DOTS, and insufficient discussion with patients may contribute to poor outcomes. The information on conversion and outcomes, by rayon, should be used for action, and the results in the different facilities compared to evaluate procedures.

All TB patients are offered HIV testing. In 2005, 900 out of 1,200 persons accepted, and 91 were diagnosed with TB/HIV (10 percent). Co-trimoxazole preventive therapy is not used. There are no restrictions on the use of ARV. Isoniazid preventive therapy has not been implemented. Tuberculin skin testing is widely used for diagnosis, in spite of the frequent BCG re-vaccinations.

Collaboration with PATH is good.

In conclusion, the diagnostic and case detection procedures are good, and adherence to treatment is poor. There is a wealth of information that should be used to guide policy in Kyiv City and at the national level.

Recommendations

- Use the experience of Kyiv City as an example of better quality medical diagnostic practices.
- Use the information from cohort analysis to identify best methods to increase treatment adherence and to monitor trends in sputum conversion and treatment outcomes.

Attachment I. CD version of final evaluation report document.