



USAID | **UKRAINE**
FROM THE AMERICAN PEOPLE

STRENGTHENING TUBERCULOSIS CONTROL IN UKRAINE PROJECT

STRENGTHENING TUBERCULOSIS CONTROL IN UKRAINE

ANNUAL REPORT
APRIL 2, 2012 – SEPTEMBER 30, 2013

20 October 2013

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International in partnership with Project HOPE.

STRENGTHENING TUBERCULOSIS CONTROL IN UKRAINE

**ANNUAL REPORT
APRIL 2, 2012 – SEPTEMBER 30, 2013**

**Contract No. AID-GHN-I-00-09-00004
Task Order No. AID-121-TO-12-00001**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

Acronyms	vii
Executive Summary	1
I. Accomplishments by Objective	3
Objective 1: Improve the quality and expand availability of DOTS-based TB services	3
Objective 2: Create a safer medical environment	19
Objective 3: Build capacity to implement PMDT programs for MDR/XDR-TB.....	24
Objective 4: Improve access to TB/HIV co-infection services.....	29
II. Schedules	36
III. Challenges.....	37
Annexes	
Annex A. Performance Monitoring and Evaluation Report.....	39
Annex B. Qualitative Baseline Assessment of Local TB Control Measures.....	52
Annex C. List of Sub-Awards.....	77

ACRONYMS

ACSM	Advocacy, communications, and social mobilization
AR	Autonomous republic
ART	Anti-retroviral therapy
CoE	Center of excellence
DOT	Directly observed treatment
DOTS	Directly observed treatment, short-course
DRS	Drug resistance survey
DST	Drug susceptibility testing
EQA	External quality assurance
FDU	Foundation for the Development of Ukraine
GF	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GoU	Government of Ukraine
GTBI	New Jersey Medical School Global Tuberculosis Institute
HIV/AIDS	Human immunodeficiency virus/acquired immune deficiency syndrome
HCW	Health care worker
IC	Infection control
IEC	Information, education, and communication
IQA	Internal quality assurance
KAP	Knowledge, attitude, and practice
M&E	Monitoring and evaluation
MDR-TB	Multidrug-resistant tuberculosis
MoH	Ministry of Health
NGO	Nongovernmental organization
NRL	National Reference Laboratory
NTP	National Tuberculosis Program
OR	Operational research
PAL	Practical approach to lung health
PHC	Primary health care
PLWH	People living with HIV
PMDT	Programmatic management of drug-resistant TB
PPE	Personal protective equipment
URCS	Ukrainian Red Cross Society
UV	Ultraviolet
R&R	Recording and reporting
SES	State Sanitary and Epidemiological Service
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOPs	Standard operating procedures
STbCU	Strengthening Tuberculosis Control in Ukraine
TB	Tuberculosis
TIRC	TB Training and Information Resource Center
TST	Tuberculin skin test
UCDC	Ukrainian Center for Socially Dangerous Diseases Control
USAID	United States Agency for International Development
WHO	World Health Organization
XDR-TB	Extensively drug-resistant tuberculosis

EXECUTIVE SUMMARY

Project Overview

The five-year USAID Strengthening Tuberculosis (TB) Control in Ukraine (STbCU) project, implemented by Chemonics International in partnership with Project HOPE and the New Jersey Medical School Global Tuberculosis Institute (GBTI), seeks to improve the health status of Ukrainians by reducing the burden of TB through specific quality assurance and system strengthening measures for routine TB services, multidrug-resistant TB (MDR-TB), and TB/human immunodeficiency virus (HIV) co-infection. This report summarizes key accomplishments and progress by objective for Year 1 (April 2, 2012-September 30, 2013).

Accomplishments Summary

Objective 1: Improve the quality and expand availability of the World Health Organization (WHO)-recommended directly observed treatment, short-course (DOTS)-based TB services.

- In Year 1, new curricula on TB and MDR-TB case management, laboratory diagnostics, and infection control (IC) based on WHO-recommended best practices were introduced by the project and approved for use at Ukrainian medical universities. In addition, 790 health care providers successfully completed project-organized training and started applying best practices in TB detection, treatment, and prevention at their workplaces.
- National-level external quality assurance (EQA) guidelines were drafted to address deficiencies in the quality of laboratory practices. These guidelines now are undergoing legislative review. The health administrations in all USAID-supported regions issued local orders requiring that TB microscopy quality assurance be performed annually. Of these laboratories, 78.6 percent underwent EQA with over 95 percent correct microscopy results.

Objective 2: Create a safer medical environment at the national level and in USAID-supported areas.

- Two regulatory documents on TB infection control (IC) were developed: one for TB treatment facilities and one for laboratories that perform TB diagnostics. In addition, two specific legal sections were proposed during the revision of the Ukrainian Law on Ensuring Sanitary and Epidemic Safety of the Population that specify IC and medical waste management procedures. Due to these and other reforms promoted by USAID, the State Sanitary and Epidemiological Service (SES) now implements evidence-based TB IC measures rather than focusing on punitive actions, as it previously did. The SES also established a new national group of TB IC experts to provide regional health facilities with recommendations and mentorship.
- IC plans in 18 health care facilities in USAID-assisted regions became operational. These plans included such measures as assessing transmission risk within facilities, distinguishing high-risk zones, separating patients in accordance with resistance profiles and contagiousness, establishing outdoor sputum collection points, and using personal protective equipment (PPE) and ultraviolet (UV) radiators.

Objective 3: Build capacity to implement programmatic management of drug-resistant TB (PMDT) for (MDR) and extensively drug-resistant (XDR) TB at the national level and in USAID-supported areas.

- New MDR-TB recording and reporting (R&R) forms were adopted by Ukraine's Ministry of Health to improve decision-making, aimed at the application of complete examinations, improving diagnostics and timeliness of treatment, selecting better treatment regimens, and improving drug management. The project implemented Ukraine's first pilot drug-resistance survey (DRS) in Kharkiv and Kherson in partnership with the WHO. A reliable DRS is essential to determine and justify the variety and volume of second-line drugs (pharmaceuticals used for the treatment of TB in cases of drug resistance) needed to control MDR-TB. These decisions should be made according to the drug resistance profile of Ukrainian MDR-TB patients. The DRS procedure now includes EQA of culture tests and drug susceptibility testing (DST) both within and beyond the 10 USAID-supported regions.
- With project support, the TB Center of Excellence (CoE) in Dnipropetrovsk is becoming a key implementer of the cascade training approach. To date, the CoE has facilitated 19 training events. Additionally, during nine supervisory/mentoring visits, mentoring teams have provided more than 100 TB specialists from the Dnipropetrovsk *oblast* with on-the-job training and consultation on issues related to TB case detection in primary health care (PHC) facilities, laboratory diagnostics, DOTS, TB/HIV management, and TB IC. The CoE's clinical arm also worked to improve patient case management according to WHO recommendations on PMDT. National TB IC experts have recognized the CoE as a model to be followed by other TB facilities.

Objective 4: Improve access to TB/HIV co-infection services at the national level and in USAID-supported areas.

- The project introduced a TB screening questionnaire in AIDS Centers. All people living with HIV (PLWH) now undergo TB screening procedures to identify TB symptoms in a timely manner.
- With project support, the MoH added a new TB section to its R&R forms on provider-initiated HIV testing and counseling (PITC) to capture information on TB prevalence among individuals who undergo HIV testing. This has improved the timeliness of dual infection detection and treatment, helping to increase patient survival.

I. ACCOMPLISHMENTS BY OBJECTIVE

Objective 1: Improve the quality and expand availability of the WHO-recommended DOTS-based TB services.

Activity 1.1: Build institutional capacity to improve the quality of DOTS-based programs.

Per Task 1.1.1, to strengthen the formal medical education system to include internationally recognized, modern approaches to TB control, the project incorporated international standards of TB care into the pre- and postgraduate medical education curricula throughout the reporting period. The team collaborated with faculty members from leading medical universities and the National TB Institute to develop a common vision for the revised curricula, as summarized below.

Prominent TB experts from Ukrainian medical universities were invited to develop training materials for PHC and laboratory training. Their role was to ensure the utility of the materials in their own day-to-day educational activities. All new training materials were reviewed and endorsed by the academic board of the National TB Institute and approved by the scientific experts council of the State Service on HIV/AIDS and Other Socially Dangerous Diseases. These materials were then pilot-tested by postgraduate medical students specializing in family medicine at the National Academy of Postgraduate Education and the Dnipropetrovsk Medical Academy. The materials were modified based on feedback received from professors and trainees during the pilot period. To institutionalize TB-related topics and integrate these materials into PHC specialists' education, professors of family medicine were invited to conduct training.

Modern TB IC practices were also incorporated into curriculum materials. Until 2013, courses in epidemiology promoted an obsolete understanding of TB transmission and prevention. To tackle this information gap, the team helped develop an elective course on TB IC. The course was endorsed by the MoH and was offered at the National Medical University and the Kharkiv Medical Academy of Postgraduate Education. It will now be incorporated into the continuing medical education curricula for medical students and TB specialists.

Revisions of training materials related to MDR-TB case management were also endorsed by the academic board of the National TB Institute. The project team is preparing to pilot-test these new materials at the Kharkiv Medical Academy of Postgraduate Education.

In total, the project developed three original sets of training materials:

- TB case management in PHC facilities.
- MDR-TB case management.
- Use of the GeneXpert technology in TB case detection (especially designed for an international training, which took place from July 29, 2013 to August 2, 2013 in Dushanbe, Tajikistan — see Task 1.1.4).
- Updated materials on TB microscopy for laboratory specialists and materials on TB IC for epidemiologists. These materials are available on the project website and will be linked to the TB Training and Information Resource Center (TIRC) website, when operational.

In December 2012, the MoH endorsed a new national protocol on TB case management that marked a significant shift toward standardized approaches. However, the protocol also contains discrepancies with WHO-recommended standards regarding TB care and infection control. Most importantly, the Ukrainian protocol makes DOTS optional. While the project team incorporated portions of the protocol into its updated training materials, the team also emphasized the discrepancies at various meetings with partners and in a letter to the State Service on HIV/AIDS and Other Socially Dangerous Diseases. On August 16, 2013, the MoH issued an additional update to this protocol which removed some of these discrepancies. The team recommended submission of the new TB protocol to the WHO for evaluation. The WHO's final feedback and recommendations were received in September 2013, and they emphasized the same gaps as the project.

After the new protocol was released, the project hosted a series of workshops for 268 local counterparts from the USAID-supported regions of Kyiv, Dnipropetrovsk oblast, Zaporizhzhia oblast, and the Autonomous Republic (AR) of Crimea. Participants discussed the new national protocol with its authors, Dr. Svitlana Cherenko and Dr. Natalia Lytvinenko, who answered questions and provide additional clarification. To continue the dialogue and promote protocol reform, the project created a "Protocol Q&A" page where national experts could respond to professional inquiries about the protocol and provide information on international best practices (see Task 1.1.6).

Increased knowledge through training and workshops. The project held a number of thematic workshops throughout the 10 USAID-supported regions to inform medical practitioners and institutionalize effective TB control measures such as DOT-based services, laboratory EQA, TB IC measures, the practical approach to lung health (PAL), MDR-TB case management, and TB/HIV case management (see Tasks 1.1.4, 1.2.1, 2.1.1, 3.1.2, 4.1.1)

Per Task 1.1.2, to establish a TB Training and Information Resource Center (TIRC), the project, in cooperation with a U.S., woman-owned small business, The Panagora Group, developed a strategy for implementation. The project conducted a series of in-depth interviews with TB specialists to gain insight into the needs and expectations of TIRC users. Additionally, the project partnered with the Bibliomist Program to conduct a sociological survey among 600 library visitors in the capital cities of six of the USAID-assisted regions to clarify the personal and public health interests and needs of the public. As a result, the TIRC will include a website providing TB information and links to resources, a quarterly e-newsletter, e-alerts, and access to a network of practitioners offering expert-moderated forums and clinical case discussions. To prepare for the online TIRC, the team has begun uploading materials to the STbCU website. Training materials, TB-relevant publications, and a Q&A section have already been uploaded (see Tasks 1.1.1, 1.1.3, and 1.2.4).

Per Task 1.1.3, to provide training, refresher training, supervision, and mentoring for health care providers, the project implemented a robust training plan in which 790 participants took part (see Exhibit 1). Each USAID-supported region received tailored coverage based on the needs assessment conducted by the project (see Annex B). For instance, in Luhansk oblast, which was the last to be included into the previous USAID-supported TB control project, TB IC was identified as a weak link in the spectrum of TB control efforts. Therefore, in this oblast, more attention was paid to the education of epidemiologists. In Dnipropetrovsk oblast, where improper case detection mechanisms were discovered, the project targeted PHC doctors and laboratory specialists.

Exhibit 1. Number of Trained Specialists by Specialty and Work Venue											
Specialty	Region										Total
	AR Crimea	Dnipropetrovsk	Donetsk	Zaporizhzhia	Luhansk	Odesa	Sevastopol City	Kharkiv	Kherson	Kyiv City	
PHC doctors	32	111	1	45	28	29	44	43	61	34	428
TB specialists (doctors and nurses)	34	6	3	6	5	7	3	61	6	5	136
Laboratory specialists	8	35	1	10	9	1	2	31	12	14	123
HIV specialists	-	-	-	-	-	1	-	-	-	4	5
Epidemiologists	7	2	7	6	34	9	2	10	4	15	96
Engineers	-	-	1	-	1	-	-	-	-	-	2
Total	81	154	13	67	77	47	51	145	83	72	790

To ensure that trainees are successfully applying the knowledge and skills gained through project-led training in their daily work and practice, the team incorporated cascade training and mentoring into follow-up activities. Routine mentoring and supervisory visits were introduced in the third quarter. Since then, these visits have expanded into a large-scale mentoring campaign (see Task 1.1.5).

As the national protocol on TB case management is currently being updated, the originally planned training of trainers (TOT) for professors of family medicine was postponed until Year 2 so as to provide participants with the most up-to-date information (see Task 1.1.1).

To encourage physician participation in training, the State Service on HIV/AIDS and Other Socially Dangerous Diseases agreed to sign and endorse certificates of participation issued by the project.

Per Task 1.1.4, to increase the efficiency of Ukraine's TB laboratory network, in Year 1 the project concentrated on ensuring implementation of an effective EQA system for smear microscopy. The Qualitative Baseline Assessment of Local TB Control Measures (Annex B) revealed that elements of the WHO-recommended EQA system were already in place in many oblasts. Three EQA mechanisms are employed in these regions: onsite evaluation, panel testing (testing a lab technician's proficiency by allowing the technician to stain, read, and evaluate smears of known status), and blind rechecking.

Despite these encouraging findings in certain regions, significant gaps were revealed in the EQA systems in other oblasts. In Zaporizhzhia oblast, Luhansk oblast, and AR Crimea, EQA implementation was sporadic, and panel testing has been replaced by irregular and selective rechecking of positive smears by the staff of Level 2 and Level 3 laboratories. Further collaboration with laboratory specialists then led to the discovery of additional shortcomings. For example, although local regulations on EQA exist in almost all USAID-supported regions, the means by which these regulations stipulate that EQA should be conducted were neither standardized nor did they adequately conform to WHO-recommendations. In some

cases, only stained slides were used in panel testing, and the panels used for such testing often contained a maximum of 5 slides instead of the WHO-recommended quantity of 10. Perhaps the most troublesome finding is that the EQA process has not been conducted regularly for a number of years. Many health care professionals attributed this lapse to the absence of national regulations. When the team attempted to assess recent progress in the quality of laboratory smear tests, it discovered that EQA results are neither properly registered nor properly analyzed, and no performance feedback is given to any oblast laboratories, with the exception of Kharkiv oblast.

For these reasons, the project focused on providing technical assistance in developing national EQA regulations. The working group assigned to develop this national order stipulated WHO-recommended standards for EQA procedures, including annual testing, specifying the number of slides in a panel, employment of all techniques by EQA, and repeated EQA in case of poor lab performance. In producing the final version of this order, project representatives were able to ensure that the language used in the text matched that used by WHO. The technical revisions have been completed, and the revised protocol is awaiting endorsement by the Ministry of Justice.

Meanwhile, the project team is helping to develop regional regulations and providing technical assistance to all Level 3 laboratories concerning EQA of laboratory-based diagnostics. The focus is on those oblasts where EQA performance gaps were discovered: Zaporizhzhia oblast, Kherson oblast, Luhansk oblast, and AR Crimea.

On the Right Path in Luhansk

Previously, Luhansk oblast had no EQA system in place. After project trainings and technical assistance, the local administration approved new regulations in August 2013 and implemented a system of shared responsibilities among Level 2 and Level 3 laboratories to maximize staff resources.

The most significant progress toward improving EQA practices has been made in Zaporizhzhia where 100 percent EQA coverage was achieved. The remaining three oblasts struggle with regulations, clear delineation of roles and responsibilities, and adherence to standards. In AR Crimea, the project initiated an overhaul of the local regulation governing EQA procedures. As a result, local authorities delineated roles and responsibilities for EQA and determined the number of laboratories eligible to perform smear sputum test. As a result, 9 out of 16 Level 1 laboratories have achieved 95 percent correct results. In Kherson oblast, the team helped correct violations of standards relating to panel testing by inviting the head of the national reference laboratory to the region twice. During mentoring visits to Level 3 laboratories, it became apparent that laboratory specialists were unable to maintain and store WHO-recommended R&R forms. The team came to an agreement with the Bibliomist Program to conduct joint training for laboratory specialists on basic computer skills during Year 2 (see Task 1.1.2). In the meantime, the project recommended keeping copies of EQA protocols in laboratories that undergo EQA and laboratories that perform EQA procedures.

Mentoring visits to Level 1 laboratories revealed the need for training on EQA methods. This need was particularly acute in Luhansk oblast, Kharkiv oblast, and Dnipropetrovsk oblast. The team invited 16 laboratory specialists from these oblasts to the Dnipropetrovsk CoE to receive up-to-date training on EQA.

Issues related to laboratory diagnostics and the results of mentoring visits were discussed at 14 roundtable meetings attended by 447 laboratory specialists. The TB culture and DST training originally scheduled for September 2013 were postponed until Year 2, as the heads

of Level 3 laboratories had just received thorough training on these issues from a Global Fund-supported program. Postponement will enable the STbCU project to incorporate findings from the ongoing countrywide DRS (see Task 3.1.5) and relevant information about the role of GeneXpert® into project training.

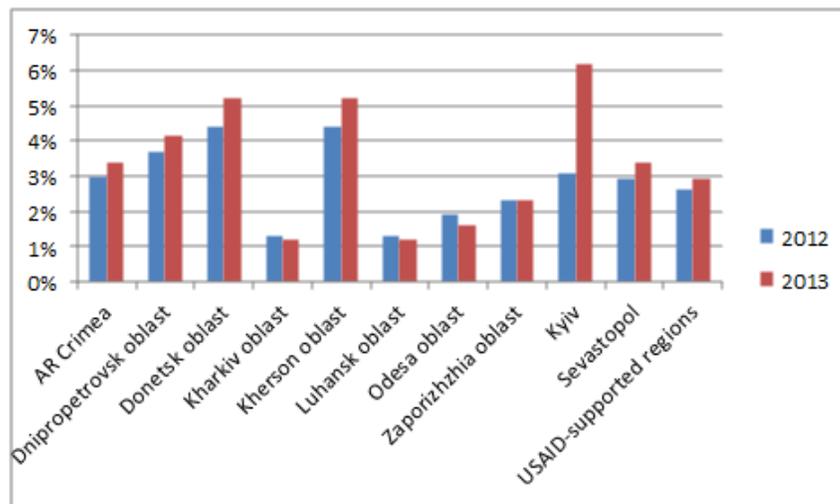
The EQA efficiency analysis performed by the project in 2012 confirmed that laboratory-based quality assurance mechanisms are satisfactory in nine USAID-supported regions, with an average of 87.4 percent of laboratories in these regions performing microscopy with over 95 percent correct results. In Donetsk oblast, Dnipropetrovsk oblast, Kharkiv oblast, Kherson oblast, and the cities of Kyiv and Sevastopol, the results ranged from 96 percent to 100 percent. In Luhansk oblast, routine EQA is still not in place, causing the overall indicator throughout all 10 regions Year 1 to be lower, at 78.6 percent (see Annex A).

Regional regulations on EQA have now been developed in all USAID-supported regions. In regions where regulations existed before the project began, the regulations were updated to bring them into compliance with WHO recommendations and the new draft national regulations.

Thanks to project efforts, the first reliable statistics on TB detection via smear microscopy at the PHC level in the first half 2013 were produced – a key National Tuberculosis Program (NTP) and project indicator. All USAID-supported regions submitted an analysis of the efficiency of their Level 1 laboratories.

Collectively, these results show varied levels of improvement across regions (Exhibit 2).

Exhibit 2. Smear Sputum Detection Rates, 2013



It is worth mentioning that even in regions that consistently report poor and even have declining rates of TB detection by smear microscopy (such as Luhansk and Odesa oblasts), some Level 1 laboratories showed rather promising results. For example, in Stanychno-Luhansk, Kremennaya, and Severodonetsk (towns in Luhansk oblast) a significant number of tests has been performed and TB detection rates of 6.7 percent, 5.3 percent and 4.5 percent were reported by these labs, respectively. In Odesa oblast, laboratories located in the towns of Ovidiopol, Rozdilne, and Balta reported detection rates of 7.5 percent, 6.3 percent and 5.7 percent, respectively. Thus, the project target indicator of 4.5 percent has been met in these laboratories. Unfortunately, TB detection rates by sputum smear microscopy at other laboratories in these oblasts are sharply lower than the rates achieved by these select facilities.

The team will take this data into consideration when planning mentoring activities in both oblasts. Luhansk and Odesa oblasts have been chosen as priority targets for technical support and mentoring activities aimed at improving laboratory services in Year 2. Kharkiv oblast also has a low overall TB detection rate; however, in contrast to the situation in Luhansk and Odesa oblasts, the low rate in Kharkiv is most likely the result of systematic problems with patient selection and the quality of collected sputum samples rather than problems with laboratory performance. Data collected from Kharkiv oblast in 2012 showed that whereas the rate of quality microscopy practices in Level 1 laboratories is about 98 percent, approximately 26.5 percent of sputum samples used for case detection in those laboratories were collected incorrectly (that is, saliva was collected instead of sputum). The STbCU project will address this unacceptably low quality level in mentoring visits to PHC facilities in this oblast.

Implementing the GeneXpert® Technique. The project has also helped to introduce a new TB diagnostic technology, the Xpert® MTB/RIF test. Nine Level 3 laboratories in USAID-supported regions have been working with Global Fund (GF)-purchased GeneXpert equipment since December 2012. The project provided technical assistance on the day-to-day use of the equipment in these locations. Staff from these laboratories identified several issues with the use of the GeneXpert machines, especially concerning the



The head of Tajikistan's national reference TB laboratory demonstrates TB diagnostics using a GeneXpert machine. — Photo: Maryna Karnaukhova

interpretation of results and discrepancies in the identification (or not) of drug resistance via GeneXpert methods and standard bacterial cultures. The team analyzed this feedback and used it as a foundation for developing a special training program on the GeneXpert technology. The training took place from July 29, 2013 to August 2, 2013 in Dushanbe, Tajikistan. This location was chosen because international partners recognized successful integration of Xpert® MTB/RIF testing into Tajikistan NTP. The training was designed to address problems identified by Ukrainian lab specialists and clinicians when administering, performing, and interpreting the results of the Xpert® MTB/RIF test. Six leading laboratory specialists, including the head of the National Reference Laboratory (NRL), participated. Following this training, these specialists were able to implement the technique in their workplaces, assist clinicians in interpretation of the test, and share their expertise with others.

During analysis of the implementation of the newly endorsed protocol on TB case management (see Task 1.1.1), the team identified the need to develop national regulations on the use of the Xpert® MTB/RIF test and offered to provide the State Service on HIV/AIDS and Other Socially Dangerous Diseases with technical assistance on this matter. The project is now in the process of procuring two GeneXpert machines, and per the current agreement between the State Service on TB/HIV and Other Socially Dangerous Diseases and USAID, the GeneXpert equipment will be installed in the TB dispensary in Kryviy Rih (Dnipropetrovsk oblast) and in the Kyiv city AIDS center. In Year 2, the project will

facilitate onsite mentoring to support implementation of Xpert MTB/RIF standard operating procedures (SOPs), as well as comparative analysis of the technology's use in TB and HIV facilities.

Enhancing M&E. Per Task 1.1.5, to strengthen TB-related monitoring and evaluation (M&E) systems and TB surveillance systems, in Year 1 the project focused on strengthening M&E systems at both the national and regional levels. With strong stakeholder support, a subgroup was created within the main M&E working group to harmonize R&R systems across Ukraine. During this process, a variety of gaps that hampered a comprehensive analysis of current NTP data were discovered. These gaps included the following:

- Insufficient reporting on adverse reactions to TB treatment.
- Insufficient reporting on the TB/HIV detection rate.
- No gender-disaggregated epidemiological analyses.
- No analysis of treatment outcomes disaggregated according to patients' HIV status.

The project has also been participating in a MoH working group on MDR-TB R&R forms since the first quarter of Year 1. The team urged this group to include reporting on adverse reactions to TB treatment, which occur with a higher frequency among MDR-TB patients than among patients with drug-susceptible TB, when revising the MDR-TB Treatment Card (TB 01). Updated forms that include reporting on adverse reactions to treatment are now in use in all TB facilities in Ukraine. Follow-up on adverse reactions and the management of such reactions have also become more consistent and reliable. Fully reliable reporting on the real prevalence and management of treatment side effects is expected to become available by the end of 2013.

The project also proposed including a record of whether an individual who is undergoing an HIV test has active TB on the national recording form for PITC (see Task 4.2.1). This revision was made and the updated forms have been endorsed by the State Service on HIV/AIDS and Other Socially Dangerous Diseases. Now, the proportion of newly diagnosed HIV and TB cases that undergo diagnostic and counseling services for dual infection, as well as the proportion of TB patients who are counseled and tested for HIV, is being recorded more accurately.

To harmonize R&R systems for cases of dual TB/HIV infection, the project has developed a TB/HIV referral and monitoring database to be used by AIDS centers and raion-level HIV facilities in all USAID-supported regions. This database enables the tracking of all diagnostic procedures used for timely detection of TB among HIV patients. The database has been in place and is operating successfully as of May 2013 in all USAID-supported regions (see Task 4.3.2). The project also proposed reporting on this data to the state AIDS reporting system. This suggestion has been widely accepted by stakeholders, and an updated reporting form is currently being finalized. These changes create the necessary foundation for the countrywide use and long-term sustainability of these new reporting practices.

The team records and analyzes gender-specific data on HIV-status and TB treatment outcomes separately. Treatment efficiency was significantly higher among female patients, especially among those with MDR-TB. However, the measured differences between the frequency of treatment failure, death, and loss to follow up among male patients and female patients were statistically insignificant.

Building a relationship with a new partner. Within the reporting period, a new state entity, the Ukrainian Center for the Control of Socially Dangerous Diseases (UCDC), was formed out of a merger between the Ukrainian Center of AIDS and the Ukrainian Center of Tuberculosis. This was not simply an administrative restructuring; formation of the UCDC also marked a significant shift in policy and produced massive staff turnover. To accelerate the incorporation of this new entity into the NTP and to ensure mutual compliance between the NTP and the UCDC (the principal recipient of the project's technical support), the team conducted a number of individual and group consultations with UCDC staff members and participated in Skype conferences held biweekly by UCDC with oblast TB facilities.

On February 25, 2013, the project organized a stakeholder meeting to coordinate efforts for improving the TB control M&E system in Ukraine. At this meeting, the project secured a commitment from the head of the State Service on TB/HIV and Other Socially Dangerous diseases to facilitate necessary updates to the TB control M&E system and to take a leadership role in this process.

Recently, in response to a request from the MoH, State Service on TB/HIV and Other Socially Dangerous diseases, UCDC, and National TB Institute representatives were included in project-led field visits made to provide technical assistance to oblast-level facilities. During June and July 2013, this team visited AR Crimea, Dnipropetrovsk oblast, Odesa oblast, Kherson oblast, and Luhansk oblast. Topics addressed included the role of PHC facilities in TB case detection and outpatient treatment, TB diagnosis and treatment, R&R systems, the purpose and use of the electronic TB register (E-TB Manager), TB IC, the management of anti-TB drugs, the need to streamline TB control funds to prioritize outpatient treatment over inpatient treatment services, and the need for a wider shift in medical practice from hospital-based approaches to TB care to outpatient, DOT-based treatment services. Specific recommendations for each oblast were submitted to the State Service on HIV/AIDS and Other Socially Dangerous Diseases and presented at a meeting led by the minister of health on September 25, 2013. Agreement to resume work on the national M&E plan was reached at this meeting. The project will be providing technical assistance in this capacity during Year 2.

Donor coordination for better R&R. Recognizing that quality data collection and analysis are crucial for strengthening the NTP, the team has been collaborating closely with the USAID Systems for Improved Access to Pharmaceuticals and Services (SIAPS) project to implement the E-TB Manager in all USAID-supported regions. On November 20, 2012, a three-day workshop was held jointly by both USAID projects to develop a shared vision for implementation across regions.

Upon the UCDC's request, TB facilities at the oblast and the raion level in the city of Sevastopol, AR Crimea, Odesa oblast, Zaporizhzhia oblast, and Kharkiv oblast were selected to receive pilot support to strengthen data collection and analysis. In these regions, key data quality concerns were identified and efforts were made to harmonize data analysis, with the overall goal of improving the TB M&E system. Regional technical coordinators conducted 10 visits to USAID-supported regions to provide technical assistance and to identify any need for additional training on the installation and use of the E-TB Manager. The team provided feedback on gaps in the data recorded by the E-TB Manager database system, especially gaps in the patient data necessary for successful case management. Recommendations for improving data management, including specific recommendations related to cases of MDR-TB and TB/HIV co-infection, were made to SIAPS, which accepted them all. The team is

tracking the incorporation of these suggestions into regular E-TB Manager use and practice by USAID-assisted TB facilities.

Building upon monitoring tactics employed by earlier USAID-funded TB projects and by the GF Round 9 program, the project developed a new process for providing technical support to health care facilities based on mentoring (see Task 1.1.3). Plans and targets for mentoring visits are based on assessment findings (see Annex B). As problems identified by the assessment were often rooted in discrepancies between the knowledge and practice of health care professionals and those of health care administrators, the team made sure to include on-the-job capacity building and educational sessions in every mentoring visit. They also provided consultation on topics relevant to health care providers' responsibilities and any identified shortcomings in their performance.

Tailored technical assistance through mentoring. Mentoring visits into USAID-supported regions began during the third quarter. Since then, these visits have expanded into a large-scale mentoring campaign. In total, project specialists and regional coordinators have performed 157 mentoring visits to central raion inpatient facilities, central raion outpatient facilities, and PHC points in rural areas. To date, 1,338 health care workers (HCW) have received on-the-job technical assistance on TB diagnostics, treatment, and case management, as well as TB IC practices and coordination of TB/HIV services. During the reporting period, mentoring teams visited all 10 USAID-supported regions. Recurring visits have already been conducted at some sites.

The mentoring process focused on the following: improving TB case detection at the PHC level (131 visits), improving laboratory diagnostics (128 visits), improving DOTS services (108 visits), improving the management of cases of TB/HIV co-infection (52 visits), and improving TB IC mechanisms (98 visits). The data obtained during these visits was used to analyze the local situation in each region, as well as to identify the best regional practices so as to scale up replicable and successful models of TB control. For instance, in Rozdilne raion of Odesa oblast, after strict DOTS implementation, treatment efficiency improved from 52 percent to 70 percent. In Shirayevo raion of the same oblast, treatment efficiency improved from 63 percent to 100 percent in the first half of 2013.

Collaborating for better M&E. The project also provided technical assistance at summary conferences where regional TB control programs' performance, accomplishments, challenges, and gaps were discussed. Performance was assessed according to key TB indicators, and the evaluation of TB treatment outcomes was based on a cohort analysis conducted in USAID-supported regions in 2012. The team conducted eight meetings with TB statisticians and specialists responsible for cohort analysis and provided technical support to improve R&R by analyzing systemic errors and modifying data collection and analysis tools, data validation methods, and quality control practices. This laid the foundation for a complete analysis of cohort data at the end of June 2013, when data on the treatment outcomes of cases detected in 2011 and MDR-TB cases detected in 2010 became available. Statistical analysis revealed that the reliability and reproducibility of TB treatment outcomes in USAID-supported regions was consistently higher than in the rest of Ukraine. At the same time, treatment outcomes throughout USAID-supported regions can still be improved. The team contributed to national M&E plan development by improving the R&R system, analyzing treatment outcomes, and developing a platform for operational research (see Task 1.3).



Informational materials for medical professionals produced or funded by the project.
 — Photo: STbCU Project

Per Task 1.1.6, to develop information, education, and communications (IEC) materials, the objective was to increase health care providers' knowledge of the WHO Stop TB Strategy and to improve their day-to-day practices. Work began with a desk review of existing materials developed by other donor projects. A serious shortage of materials on TB IC was noted, and further research revealed PHC specialists' lack of awareness of IC measures (see Task 1.3). The team developed four new resources for distribution during training.

Per Task 1.1.7, to increase laboratory capacity for IC, the team developed a training module on "Infection control in laboratories that perform TB diagnostics." These materials were sent to the WHO specialist on TB IC for review and will be subsequently submitted to the SES and the State Service on HIV/AIDS and Other Socially Dangerous Diseases. The training module on TB IC in laboratories was also included in the curriculum for training on techniques in sputum smear microscopy (Task 1.1.3).

Activity 1.2: Expand access to TB service delivery to improve prevention, diagnosis, and treatment of TB.

A key to success in expanding access to TB services is reducing the stigma associated with TB and HIV infection. After approval of the grants manual on April 17, 2013, the project prepared a draft request for grant applications for nongovernmental organizations (NGOs) in four target regions (Kyiv city, Sevastopol city, Kharkiv *oblast*, and Dnipropetrovsk *oblast*) to support TB advocacy, communication, and social mobilization (ACSM) activities to improve TB/HIV detection and treatment.

To further mobilize civil society, expand access to services, and improve the diagnosis, management, and prevention of dual infection among at-risk populations, the team participated in two meetings of the MoH working group on the national ACSM strategy for promoting NGOs' role in advocating for these services, one in August 2012 and another in June 2013. The team recommended involving communities in TB control and developing

local ACSM strategies, outreach services, and social support and follow-up services for TB and TB/HIV patients.

Per Task 1.2.2, the STbCU project is in the process of developing a grant agreement with the Ukrainian Red Cross Society (URCS) to support efforts to improve treatment adherence among TB patients. Built upon previous successes of donor programs, the grant supports a patient-centered approach to TB control. Following USAID approval, URCS will begin DOT-based patient support and outreach activities in all 10 USAID-supported areas.

Per Task 1.2.3, the team sought to strengthen TB services provision at the PHC level. The baseline assessment revealed gaps at the PHC level in both case detection and in outpatient management. Many smear-positive cases are misdiagnosed or diagnosed only after the patient is incorrectly treated for other pulmonary diseases. Due to the widespread use of outdated equipment and the inexperience of radiologists conducting screening via chest X-ray, TB is grossly over-diagnosed among smear-negative patients. PHC doctors often deny patients the option of outpatient TB treatment, as they consider this beyond the scope of their responsibilities. This fosters resistance to treatment among patients. Deficiencies in TB diagnostics and treatment are mostly the result of doctors' low levels of knowledge about proper TB management, low levels of commitment among PHC facility administrations, and personnel shortages. The project established the following long-term goals for PHC facilities in USAID-supported regions:

- Create a comprehensive protocol for TB detection in PHC settings.
- Implement practical approach to lung health (PAL) principles in PHC settings.
- Launch an educational campaign for PHC doctors and nurses that includes training and educational publications in the academic journal *Tuberculosis, Lung Diseases and HIV Infection*, as well as other resources for specialists.
- Increase the involvement of NGOs in educating medical personnel and providing social support to TB patients during case detection and outpatient treatment.

The team made PHC facilities the focus of both its educational campaign (see Task 1.1.3) and its mentoring activities (see Tasks 1.1.3 and 1.1.5). The majority of IEC materials for specialists in Year 1 were developed with this target audience in mind (see Task 1.1.6).

The team also followed the lead of a WHO and GF initiative by integrating PAL into the routine practice of health care professionals at PHC facilities. Two joint meetings with regional family doctor associations, one in Kyiv and one in AR Crimea, were dedicated to promoting this approach. Participants proposed next steps for improving case detection, including opening new sputum collection points.

The team made special efforts to improve TB services in the penitentiary system. Current operating procedures of the penitentiary health care system are similar to those used in public PHC facilities; however, regulations governing TB control in penitentiary settings are often obsolete and do not reflect internationally recommended best practices. The team confirmed that early activities successfully improved TB control practices. In particular, sputum samples from incarcerated patients are now referred to GeneXpert testing in civil sector TB facilities in some penitentiary settings. A local regulation stipulating the venue and procedure for TB case detection among incarcerated persons has been developed in Kherson oblast. In Odesa oblast and AR Crimea, TB facilities shared their approaches to TB and TB/HIV case

detection with their regional penitentiary systems and are providing implementation assistance, including clinical consultations and laboratory test interpretation.

The project also made progress in forging a public-private partnership to strengthen TB control measures at the PHC level through collaboration with DTEK. On April 17, 2013, two training sessions were conducted at DTEK's health facilities in Rovenky and Sverdlovsk (Luhansk oblast). Project specialists introduced current TB control strategies and DOTS principles and then outlined methods for implementing these principles in DTEK's medical facilities. Special attention was given to the unique needs of coal miners, who are at a particularly high risk for TB and other respiratory illnesses and infections from the high level of particulate matter they are exposed to during their work, as well as to specific prevention measures appropriate to this population.

In collaboration with DTEK leadership, the team also organized a study tour for DTEK medical workers on internationally recognized approaches to TB control. From September 4-5, 2013, 10 DTEK health center directors visited the department for MDR-TB in Donetsk oblast TB hospital and the Level 3 laboratory in Luhansk oblast TB hospital. Participants were given presentations on the epidemiology of TB and MDR-TB as a global and national threat and pointed out opportunities to strengthen TB control in industrial medical facilities to improve timely detection of infectious cases by means of proper triage of patients with a cough and the organization of appropriate sputum collection points.

The project captured a mix public and private sector interest in supporting TB control through collaboration with other entities. One of Ukraine's leading beverage companies, the Obolon Corporation, requested technical support to raise awareness of TB in general and among its workforce. On March 20, 2013 the team provided technical information on TB to Obolon's workers as part of World TB Day activities. Project staff organized a presentation on TB prevention, diagnosis, and treatment and distributed informational materials to nearly 1,000 members of Obolon's staff. Training materials were provided to the factory for use at subsequent TB awareness meetings. The team also provided on-the-job consultation on WHO-recommended DOT-based TB services to the factory's HCWs. The factory has since improved the TB screening program for its 3,500 workers. With project support, Obolon agreed to participate in an incentive program to improve TB detection and to strengthen TB patients' adherence to treatment by providing TB hospitals with free mineral water, juice, and other non-alcoholic beverages.

Per Task 1.2.4, developing IEC materials to support public advocacy campaigns, project staff provided individual consultations for nearly 300 TB patients in Donetsk oblast, Kharkiv oblast, and Zaporizhzhia oblast to promote treatment adherence. All patients received a copy of the booklet "Fight Tuberculosis: Everything a Patient Should Know to Cure Themselves of TB." The team invited the press offices of its main partners — the MoH, the State Service on HIV/AIDS and Other Socially Dangerous Diseases, and the SES — to collaborate on the production of these materials. Through these partnerships, more than 200 articles describing project activities and raising public awareness of TB were published. The project also organized a number of informational campaigns to raise TB awareness, as described below.

- *TB awareness campaign called “Shared Breath” (part of USAID’s Field Day in Simferopol).* More than 300 Simferopol residents participated in the campaign, and 278 people received individual consultations from TB doctors visiting from the AR Crimea TB dispensary. Activities included a lottery game called “My Lung Health.” Personal statements on TB by 78 people were



USAID Mission Director Jed Barton attends the Simferopol field day. — Photo: Viktoria Gultai

- displayed online with their portrait photos (see www.stbcu.com.ua/dyhaniye). Children were given the opportunity to win a prize by entering the “Life is Brighter without TB” drawing contest. USAID Mission Director, Jed Barton, and Victor Ageev, Mayor of Simferopol, visited the project’s activities tent. Project representatives and physicians from the AR Crimea TB dispensary briefed the mission director and the mayor on the regional TB epidemic and necessary measures to control the disease.
- *A variety of events in March 2013 to commemorate World TB Day (March 24).* These events targeted both health professionals and the public. Events for health professionals included a scientific/educational conference where new international approaches to TB control, current TB research, the pros and cons of different regional TB control programs, and the challenges that lay ahead, were discussed. For the public, the project focused on raising awareness of TB prevention, diagnosis, and treatment. Events included TB awareness lectures in schools and universities, a flash mob entitled “Tuberculosis Doesn’t Choose,” presentations, and discussions for visitors to public libraries.
- *Joint TB awareness campaign with the BIBLIOMIST program.* This campaign, which started as a series of TB awareness meetings for library visitors, was expanded to include a sociological survey conducted among library visitors on “Health of the Residents of Ukraine: Spring 2013.” The survey was implemented in six major libraries in the southeastern cities of Donetsk, Kramators'k, Luhansk, Odesa, Kharkiv, and Kherson. This category of respondents was chosen to explore public awareness of TB, information sources commonly used by the public to learn about TB and TB-related issues, and the potential for public use of an Internet-based informational resource. The survey results were made public through the project website, at the libraries that participated at the survey, and in print as a booklet outlining the main research findings (see Task 1.1.2).
- *Cooperation with the USAID AgroInvest project.* Joint activities provided TB-related information to some of the AgroInvest project’s key target groups: farmers, seasonal



Informational materials produced for the public. — Photo: STbCU Project

workers, and other members of rural communities. The STbCU team worked with the AgroInvest project to coordinate better access to TB services with raion and village administrations and arranged for continuous dissemination of health information to target populations.

- *6th Information Fair in the Verkhovna Rada.* On March 5-6, 2013, in collaboration with the USAID Parliamentary Development Project (PDP II), the project participated in the 6th Information Fair in the Verkhovna Rada (Ukrainian Parliament) to advocate for TB control agenda before members of the Parliament, their assistants, and the Verkhovna Rada staff.

The project also developed and has begun distributing four new information resources to raise TB awareness and encourage treatment and adherence among TB patients. A fifth resource is currently being finalized.

Activity 1.3: Conduct operational research to improve the National TB Program's (NTP) performance.

To lay the foundation for the operational research (OR) initiative, the project conducted baseline surveys on patient satisfaction with TB-related services and HCW awareness of infection control. The results revealed that high levels of satisfaction among patients are not correlated with the real quality of TB services available to them. A separate sub-study on “Gender-Specific Characteristics of TB Patients’ Behavior and Life Activity” revealed that, as compared to men, women demonstrated less delay in seeking medical care when they get sick, greater adherence to treatment regimens, and fewer subjective reasons for treatment interruption. They were also better able to cope with the challenges of a TB diagnosis, better manage the side effects of treatment, and more tolerant of hospitalization in TB care facilities where the conditions are not comfortable. These studies will help inform upcoming OR on delays in TB case detection, the social determinants of treatment efficacy and default, and the overall performance of the medical system. Furthermore, the results of these surveys will

help the project improve and refine its interventions and provide more appropriate medical and social services for TB patients.

To inform further technical assistance on TB IC issues, the project commissioned the analytical center “Socioconsulting” to conduct a survey on healthcare workers’ knowledge of TB IC practices. In the baseline survey conducted during October-November 2012, TB specialists displayed a low level of awareness about effective TB IC measures. In a follow-up survey, which the project conducted in September 2013, higher levels of awareness about personal protection and administrative control were observed (see Annex A).

In collaboration with WHO, UCDC, and the Foundation for the Development of Ukraine (FDU), the project developed a platform for OR that was included in the draft of the national M&E plan and shared with stakeholders. Consultations with the School of Public Health at the National University of Kyiv-Mohyla Academy, which offers graduate training in public health, later resulted in an agreement to cooperate on an OR grant program for the 2013-2014 academic year.

Exhibit 3 summarizes Objective 1 accomplishments to date based on expected life-of-project results.

Exhibit 3. Objective 1 Accomplishments	
LOP Expected Results	Accomplishments to Date
Adoption of international standards for TB control and facilitation of implementation at the national level and in all TB technical areas.	<ul style="list-style-type: none"> • Support revision of TB protocol at the national level provided. • New, approved TB protocol analyzed and proposals for its improvement presented to MoH.
Development of the NTP’s cascade in-service training system using international standards within the civilian and penitentiary sector, including development of a national standardized and accredited training curriculum.	<ul style="list-style-type: none"> • 790 health care providers attended project-supported training. • Cascade training and mentoring approach is routinely used in all 10 USAID-supported regions. • Training materials on TB and MDR-TB case management developed and approved by the State Service on HIV/AIDS and Other Socially Dangerous Diseases. • Training module on IC in TB microscopy developed. • Training materials on IC adopted into official curricula for pre-service students. • Curricula on IC for formal postgraduate education offered to Kharkiv Medical Academy of Post-graduate Education. • In anticipation of the online TIRC, the project has begun uploading educational resources and informational materials to its website.
Implementation of NTP’s supervisory and mentoring system to consistently improve the on-the-job quality of care provided by HCWs.	<ul style="list-style-type: none"> • Concept of “mentoring” outlined and promoted • Project-support mentoring teams conduct field visit to medical facilities of 157 raion level medical facilities.

Exhibit 3. Objective 1 Accomplishments	
LOP Expected Results	Accomplishments to Date
Increased involvement of the PHC system in the provision of TB prevention and treatment.	<ul style="list-style-type: none"> • 428 PHC doctors trained on TB control. • Clinic activities begin to comply with the PAL approach in AR Crimea and in the city of Kyiv. • Case detection and outpatient TB treatment in PHC facilities consistently supervised during mentoring visits. • 300 patients consulted and provided with informational materials by the project in order to improve treatment adherence. • Representatives of PHC in each <i>raion</i> in USAID-supported regions informed about WHO-recommended approaches in TB control and respiratory disease management at project educational events.
Quality assurance system in laboratories implemented and lab network for TB diagnosis at the national level and in USAID-supported areas improved.	<ul style="list-style-type: none"> • EQA local orders developed in all USAID-supported regions. • EQA system resumed normal function in 9 out of 10 USAID-supported regions and initiated in one USAID-supported region (Luhansk oblast). • WHO EQA R&R forms introduced into the TB laboratory system in 10 USAID-supported regions. • National-level EQA guidelines developed and undergoing legislative approval.
Strengthened M&E systems and TB surveillance at the national level and in USAID-supported areas; improved quality, use, and analysis of TB data by means of tools for TB and MDR-TB M&E.	<ul style="list-style-type: none"> • MDR TB R&R forms updated and approved. • Project-led recording of TB-HIV referrals introduced in 10 regions.
Recording and reporting systems consolidated in collaboration with the SIAPS project.	<ul style="list-style-type: none"> • E-TB data quality analysis held in 5 regions and shared with SIAPS.
Improved knowledge among most at-risk populations and the general community on TB.	<ul style="list-style-type: none"> • Population in 10 USAID-supported regions provided with information on TB during different educational events (libraries, USAID field days, WDTB events). • A “private-public mix” (a WHO term), an innovative approach for Ukraine created: <ul style="list-style-type: none"> ○ Established a collaborative relationship with the DTEK company and introduced standards of TB control within the DTEK occupational health care system. ○ Established a collaborative relationship with the Obolon company. Jointly facilitated training on TB control and health-seeking behavior for Obolon employees. Obolon provided products free of charge as incentive for TB patients to adhere to DOTS treatment protocols.

Objective 2: Create a safer medical environment at the national level and in USAID-supported areas.

Activity 2.1: Improve infection control.

Per Task 2.1.1, to improve IC policies, guidelines, and SOPs, the team focused changing the attitudes of TB specialists and epidemiologists toward TB IC practices. To this end, the project helped improve implementation of evidence-based policies by the SES at the central level and among health care providers at the local level. The team brought together representatives from the national and regional SES to form a national group of experts on TB IC. The objective is to promote implementation of up-to-date IC measures across Ukraine's network of TB service facilities. The group is expected to provide mentoring and supportive supervision and on-the-job training to implement managerial, organizational, environmental, and



Project TB IC specialist Andriy Aleksandrin inspecting the ventilation system at the oblast TB hospital. — Photo: Danylo Brindak

individual TB IC measures in health care and laboratory settings. It is also responsible for developing guidelines and updating SOPs to accommodate improvements in TB IC practices. Under the direction of both the SES and the State Service on HIV/AIDS and Other Socially Dangerous Diseases, this group of experts provides independent expertise on TB IC measures in medical facilities and develops recommendations specific to each region or facility.

To increase the capacity TB IC experts and SES regional heads to implement and supervise up-to-date approaches to TB IC, the project facilitated the participation of these individuals in two international training events held in Vladimir, Russia in April 2012. The first event was dedicated to the prevention of nosocomial TB transmission. The second was tailored for health care facility engineers and focused on environmental IC measures. After receiving training, the trainees developed training materials on laboratory biosafety (see Task 1.1.7) and two sanitary regulatory documents on TB IC, one for TB treatment facilities and another for laboratories that perform TB diagnostics. The experts are currently finalizing these regulations.

To institutionalize these improved TB IC measures and incorporate the topic of TB IC into medical school curricula, the project developed educational modules for pre- and postgraduate medical education that were endorsed by the Educational Board of the MoH (see Task 1.1.1).

The group of TB IC experts also developed training materials on TB IC (see Task 1.1.1). In anticipation of their endorsement by the state SES and the State Service on HIV/AIDS and

Other Socially Dangerous Diseases, the project intends to submit these materials to international IC specialists for necessary revisions.

While working with these experts to revise one of the principal laws related to TB control, the Law on Ensuring Sanitary and Epidemic Safety of the Population, the team suggested text for two specific articles, one on the provision of the infection control measures and another on the management of medical waste. The bill has been submitted to the Government of Ukraine, and the team will monitor progress toward adoption and implementation throughout the TB control system.

Per Task 2.1.2, to elaborate TB IC plans, the team continued to support the revision of IC protocols in individual TB facilities. Before the project began, effective TB IC measures were implemented in only six TB facilities, most located in Donetsk oblast, where implementation of TB IC is a major focus of the FDU. With project technical assistance, the TB IC experts developed 18 TB IC plans that were implemented in USAID-supported regions in Year 1. These new plans mostly deal with administrative IC measures and respiratory protection. In each facility, patients are triaged according to their degree of contagiousness, and DST procedures are in place. The availability of shielded UV radiators in these facilities meets 34 percent of current need, and the availability of open UV radiators meets 100 percent of current need. Currently available PPE is able to meet between 40 percent and 60 percent of HCWs' needs. All patients are currently provided masks. Due to funding shortages, environmental control is the weakest link in most TB IC plans. In most facilities, artificial ventilation is not installed or is available and functioning only in parts of the premises. For this reason, efforts were made to ensure that TB IC plans were as successful as possible and in line with current evidence-based approaches while still taking into account the realistic limitations that many TB facilities currently face. Since all of the TB IC plans mentioned here were fully developed by mid-Year 1, the project team and the group of TB IC experts have worked since to provide mentoring and supportive supervision for implementation. To date, all new TB IC plans have been successfully implemented.

Serious attention was also given to strengthening TB IC measures in penitentiary medical facilities in Zaporizhzhia oblast and Luhansk oblast. In these regions, the project supported mentoring visits by representatives from regional SES in May 2013. The focus of these visits included the following:

- Timely detection of TB in incarcerated people and in penitentiary personnel.
- The use of means for decreasing the concentration of infectious particles in the air.
- Correct use of PPE.
- Appropriate sputum collection practices.
- The establishment and use of a patient triage system.

Per Task 2.1.3, to support TB IC management teams, the project's regional coordinators involved specialists trained in TB IC in mentoring visits in 10 regions. Technical assistance by mentoring teams included TB IC recommendations and was provided to 207 different PHC, TB, and HIV facilities as a part of 112 different field visits. Recommendations made to TB facilities during these consultations included the following:

- Develop a TB IC plan in facilities that do not have such a plan in place.

- Strengthen administrative IC, as this is the most feasible and low-resource means of sustainable policy change.
- Institute a triage system to separate contagious patients from others.
- Relocate sputum collection points outdoors, as most indoor sputum collection points do not meet IC requirements.
- Correctly install and UV radiators.
- Use PPE properly in high-risk zones.
- Develop appropriate procedures for making purchase requests for PPE, including filtering face-piece (FFP) 2-class and 3-class particulate masks and shielded UV lamps.
- Develop and foster collaboration between TB facilities, AIDS centers, and SES.

The project initially intended to include SES representatives on mentoring teams and to hold quarterly meetings with local TB IC teams. Due to changes in the state SES operations and legislative limitations on visits to medical facilities by SES representatives (only one visit per year is allowed), the approach was changed to focus on national SES involving mentoring visits by TB doctors trained in TB IC. Each mentoring team meets to plan each visit, and after the visit, they produce a report and recommendations. All meetings are conducted monthly, facilitated by project regional coordinators.

During the first half of the Year 1, the project delivered various types of on-the job technical assistance on TB IC measures. Activities included one- and two-day seminars for 824 HCWs from TB facilities, AIDS centers, SES, and penitentiary medical services in 10 oblasts. During 19 field visits, the project's IC specialist and trained SES representatives provided consultations on the most affordable administrative and environmental IC measures and on appropriate use of PPE at local hospital conferences and by on-the-job training according to the project cascade training and mentoring concept (see Tasks 1.1.3 and 1.1.5). This format was used to train approximately 1,000 medical personnel in TB, HIV, and primary and secondary medical care facilities. These efforts resulted in widespread changes in attitudes about TB IC and improvements in HCWs' day-to-day practices for preventing nosocomial TB transmission and occupational infection. These activities were especially appreciated in TB treatment facilities, as TB IC has been considerably under-prioritized by the national TB control system and medical personnel were often unaware of the level of biohazard they faced in their places of work. To provide better instructions to medical personnel on the proper use of PPE and administrative control measures, special handouts on TB IC were developed (see Task 1.1.6).

The recently formed group of national TB IC experts (see Task 2.1.1) held its first organizational meeting, devoted to technical, logistical, and organizational matters, from June 25-27, 2013. Members of the group practiced the mentorship approach during their visit to the Kyiv city TB hospital and the Kyiv city AIDS center. Following these visits, members of this group developed a checklist to guide mentoring visits to TB and HIV medical facilities. Using this list, recommendations were provided to the heads of the Kyiv city TB facilities, AIDS center, and health administration.

In September 2013, the group visited TB facilities in Luhansk oblast and Dnipropetrovsk oblast. An in-depth analysis of each component of TB IC was conducted in each of the facilities, and a general review of TB IC policy in both oblasts was performed. Detailed consultations about specific local concerns and needs were also provided. The final reports from these visits were submitted to the state SES and published on the project's website.

Activity 2.2: Increase the capacity of *oblast* SES to implement, monitor, and evaluate IC interventions.

In December 2012, the project organized a conference on “International Standards for the Implementation of TB IC in Public Health and Medical Education Reforms in Ukraine.” The conference facilitated participation and effective cooperation among numerous disciplines. Epidemiologists, researchers, and other members of academia discussed how to effectively and sustainably implement international IC practices by improving and revising evidence-based norms, guidelines, and standards on TB IC. The event was supported by Ukraine’s Bohomolets National Medical University, the SES, the State Service on HIV/AIDS and Other Socially Dangerous Diseases, and the All-Ukrainian Zabolotnyy Scientific Society of Epidemiologists, Microbiologists, and Virologists. During the conference, several educational programs on TB IC for pre-service students were presented and approved, resulting in their endorsement by the MoH (see Tasks 1.1.1 and 2.1.1). The conference also jump-started improved patterns of cooperation between SES decision-makers, epidemiologists, and health care facility administrators in planning and implementation of IC activities. This collaboration later yielded a variety of positive changes in policy, including an update to the Law on Ensuring Sanitary and Epidemic Safety of the Population, updates to the sanitary rules and regulations, formation of the group of TB IC experts, and the mentoring campaign (see Task 2.1.1).

TB IC was the main focus of the project’s educational activities during Year 1 (see Task 1.1.1), and a total of 99 TB specialists and epidemiologists received training in five sessions that each took place over the course of an entire work week (see Task 1.1.3). In keeping with the mentoring philosophy, on-the-job consultations on essential TB IC practices were included in training, and consultations have been conducted during 19 field visits to oblast and raion-level facilities (see Task 2.1.3). These consultations were preceded and concluded by a “day of information” where a review of local TB IC practices was carried out.

Per Task 2.2.1, to train master trainers on IC, the project supported participation of seven national and local TB experts in an international training event on TB IC in Vladimir, Russia. Additionally, the project organized a TOT on TB IC with international participation in Donetsk from July 2-3, 2013, for 12 heads of local SES. Thus, a total of 19 master trainers were trained on IC in Year 1.

Besides improving day-to-day practices at their workplaces, these trainers also provided effective mentoring to other health care facilities. For example, in Donetsk oblast, Luhansk oblast, Odesa oblast, Kherson oblast, and Zaporizhzhia oblast, nine visits to TB facilities and AIDS centers, as well as four visits to penitentiary health care facilities, were conducted within a short period of time. These visits resulted in improved TB IC plans for these facilities (see Task 2.1.2). Requests for allocation of additional funds for PPE and UV radiators at these facilities were made based on the recommendations of the expert mentoring teams.

In Luhansk oblast, the regional SES endorsed a new local order outlining a plan for mentoring visits that covers the remainder of 2013. This marks the first time that any official regulation on mentoring has been issued by the Ukrainian SES.

Exhibit 4 summarizes Objective 2 accomplishments to date based on expected life-of-project results.

Exhibit 4. Objective 2 Accomplishments	
LOP Expected Results	Accomplishments to Date
Improved national and regional policies, guidelines, and plans for implementation of IC measures according to international standards in all civilian and penitentiary facilities diagnosing and treating people with TB.	<ul style="list-style-type: none"> • 2 regulatory documents on TB IC, <i>Sanitary rules and regulations</i>, are developed: <ul style="list-style-type: none"> ○ for TB treatment facilities. ○ for laboratories that perform TB diagnostics. • Two specific articles were proposed during the revision of the Law on Ensuring Sanitary and Epidemic Safety of the Population: <ul style="list-style-type: none"> ○ Provision of IC measures. ○ Management of medical waste.
IC plans developed and operationalized all civilian and penitentiary facilities diagnosing and treating people with TB.	<ul style="list-style-type: none"> • 18 TB IC plans were developed and implemented in facilities located in USAID-supported regions.
All three types of IC measures (administrative, environmental and personal respiratory protection) as well as biosafety measures in facilities diagnosing and treating people with TB.	<ul style="list-style-type: none"> • TB IC measures strengthened in penitentiary medical facilities in Zaporizhzhia oblast and Luhansk oblast. • An assessment of additional funds necessary for the implementation of TB IC plans was conducted and requests for those funds formally made.
An integrated, modern IC management system in all TB hospitals and TB laboratories according to international standards. IC measures include improving practices, systems, and structures to reduce health care-acquired infections in place in all 10 regions.	<ul style="list-style-type: none"> • National group of TB IC experts from SES representatives created to provide technical assistance, consultations and on-the-job trainings for TB medical facilities. • The group of TB IC expert performs comprehensive monitoring visits according to detailed checklists and guidelines that cover managerial, administrative, environmental, and individual mechanisms of TB IC. • 824 health care workers from TB facilities, AIDS centers, SES, and penitentiary medical services trained at joint seminars on TB IC.
Improve the capacity of SES to provide quality supervision and monitoring of IPC standards at the facility level in a collaborative manner.	<ul style="list-style-type: none"> • 19 master trainers and Heads of Oblast SES have been trained in TB IC.
Improve the systems for evaluation of key indicators of the performance of IPC measures at the facility level.	<ul style="list-style-type: none"> • IC checklist developed to improve the systems for evaluation of key indicators of the performance of the IC measures at the facility level.

Objective 3: Build capacity to implement PMDT programs for multidrug-resistant/extensively drug-resistant TB at the national level and in USAID-supported areas.

Activity 3.1: Provide training, supervision, and mentoring on MDR-TB case management.

Per Task 3.1.1, strengthening the existing TB CoE in Dnipropetrovsk oblast, the project began by assessing the needs of this facility. Two distinct categories of need were revealed during this assessment:

- Needs concerning the CoE as an educational institution.
- Needs concerning the day-to-day performance of the Dnipropetrovsk oblast TB dispensary, which hosts the CoE.

To address educational needs, the project supported the NGO of the Dnipropetrovsk TB specialists, which is responsible for CoE operation, in administrative and organizational issues. So far, the CoE has hosted 16 project-supported training events (see Task 1.1.3).

The team believes that day-to-day needs are the most important since demonstrating proper clinical practices is a central goal of the CoE. This is especially true in the case of MDR-TB case management, the most complicated element of TB control. To this end, the team also meets regularly with the CoE's MDR-TB Council to improve medical practices inside the facility. An internal evaluation of clinical practices assessed the quality of key clinical elements, such as inpatient diagnosis and treatment, laboratory diagnosis, and TB IC protocols. As a result, the Council chose to modify and improve a number of practices with project support. The Council also conducted an assessment of TB transmission risk within the facility and subsequently distinguished high-risk zones and developed TB IC plans specific to the needs and resources of each department. Other improvements include constant supervision of patient triage and establishment of a separate ward for MDR-TB patients who have become smear-negative and are therefore deemed to be no longer contagious. Project specialists participated in Council meetings and provided technical advice on WHO recommendations regarding PMDT follow-up.

During the final quarter of Year 1, a series of regulations were endorsed by the Dnipropetrovsk oblast health administration. These regulations formally established a number of innovations at the CoE that the project had proposed:

- Improving the performance of MDR-TB Councils.
- Establishing a diagnostic scheme whereby raion TB dispensaries are able to confirm diagnoses of drug-susceptible TB in Dnipropetrovsk oblast.
- Creating a standard timetable for sputum investigation with GeneXpert and culture technique to streamline the use of this new equipment.
- Creating local protocols based on the unified clinical protocol on TB case management (such protocols are currently being finalized).

To support improvements in diagnostic and treatment practices at the Dnipropetrovsk CoE, a number of meetings were hosted there. A total of 184 specialists were gathered over the course of three different meetings that were dedicated to sharing essential techniques and information on TB diagnosis and treatment.

With project advocacy and technical assistance, the standard treatment regimen, patient follow-up, and TB IC all significantly improved at the CoE. Currently, 83 percent of newly detected TB cases and 79 percent of previously treated TB patients show smear negativity by the end of the intensive, inpatient phase of their treatment. These percentages are significantly higher than those typically observed at either the oblast or the national level. Furthermore, the rate of conversion to sputum smear negativity among MDR-TB patients at the conclusion of inpatient treatment is currently 55 percent, which meets the national indicator. A database of clinical cases to be used as case studies during training has been built and is being populated.

The CoE has become a key element in implementation of the cascade training process. Accordingly, a plan has been developed to facilitate additional mentoring visits in cooperation with the CoE. A team of mentors who will conduct these visits was selected from among the CoE's growing pool of trainers. So far, seven supervisory/mentoring visits and two additional follow-up visits have been conducted in Dnipropetrovsk oblast, providing more than 100 TB specialists with on-the-job training and consultation on matters of TB case detection in PHC facilities, laboratory diagnostics, DOTS, TB/HIV management, and TB IC.

The national group of experts on TB IC (see Task 2.1.1) analyzed implementation of the TB IC plan in the CoE and recognized it as a model to be followed by other TB facilities.

Per Task 3.1.2, advocate for policy and guideline change, the project has taken an active part in developing a unified clinical protocol on TB case management. The team took steps to ensure that the portion of the new protocol on TB case management related to the management of MDR-TB is in line with the principles of evidence-based practice. However, several discrepancies between the procedures outlined in the protocol and the principles of PMDT were identified. In response, the team produced a position paper and enumerated their concerns in a letter to the State Service on HIV/AIDS and Other Socially Dangerous Diseases (see Task 1.1.1). While participating in the working group assigned to revise the MoH R&R forms, the team emphasized the necessity of reporting on adverse reactions to MDR-TB treatment (see Task 1.1.5).

Per Task 3.1.3, supporting quality diagnosis and treatment, the project remained in constant contact with leading national experts to follow up on MDR-TB case management. The team supported the CoE in implementing remote conferences with the MoH, the State Service on HIV/AIDS and Other Socially Dangerous Diseases, and the UCDC. During a Skype conference with the UCDC held on September 19, 2013, the team helped to clarify issues related to adverse reactions to treatment, especially procedures for registering adverse reaction events, the definition of therapeutic diapason as a difference between therapeutic and toxic doses, the circumstances under which a patient's medication or dose may be modified, and diagnosis and management of side effects from ethionamide/prothionamide therapy. Information and clinical experience related to these issues was shared with 27 regions within and beyond USAID-supported areas.

The project also supported the development and institutionalization of training materials on MDR-TB case management. These materials have been endorsed by the National TB Institute and are currently being used in the project's training program. The team also shared these materials with the State Service on HIV/AIDS and Other Socially Dangerous Diseases

and uploaded them to the project website, where they are publicly available (see Tasks 1.1.1, 1.1.2, 1.1.3, and 1.1.6).

Given the complexity and rapid development of PMDT as part of the current global strategy for TB control, the team made efforts to build leading TB experts' capacity in MDR-TB case management. The Project supported participation by a group of national TB experts in the first congress of the TB Association of the Russian Federation in St. Petersburg on October 18-20, 2012. Then, the project's chief of party participated in the 43rd conference of the International Union against TB and Lung Disease (IUATLD), which took place in Kuala Lumpur on November 13-17, 2012. Following this conference, the chief of party was able to present new information and strategies for TB control to the TB specialist community in Ukraine, including new methods for laboratory quality assurance and IC, new diagnostic techniques, and the current status of clinical trials with new treatment regimes. Much of this information was shared at the conference on MDR-TB that was held in Odesa on March 5, 2012. The team submitted five abstracts to the 44th IUATLD conference, which will be held in Paris from October 30 to November 3, 2013. Three of these abstracts were accepted by the conference organizers.

The team recently began delivering training on MDR-TB, which will eventually improve the performance of oblast councils against the following criteria: proper registration, compliance of treatment regimens with national protocols, compliance with local second-line drug stock-outs, and proper treatment monitoring. Project mentoring visits indicate that there are three MDR-TB councils in USAID-supported regions that perform adequately across at least three of the four criteria. Proper MDR-TB case registration is in place in Luhansk oblast, Odesa oblast, and Donetsk oblast (see Annex A).

Per Task 3.1.4, collaborating on second-line drug management, the project has participated in several MoH committee meetings on drugs, medical commodities, and other equipment to be procured on an ongoing basis as part of the NTP. While material resources are limited, the team encouraged and, to a certain degree, helped establish an evidence-based approach to drugs and the selection of diagnostic tools. For example, due to project advocacy, a quantity and variety of drugs sufficient to allow doctors to tailor a second-line evidence-based regimen (WHO-recommended groups I-IV), including Terizidone and PAS, will be procured at the expense of the GF Round 9 Second Phase grant and the MoH. In addition, following the Project's advocacy the MOH committee decided to avoid procuring kits for tuberculin skin tests because their efficacy was not supported by evidence. Instead, they recommended investing in immune chromatography test commodities to differentiate Mycobacteria tuberculosis complex and MOT (Mycobacteria other than tuberculosis) in suspected cases of TB. In September 2013, an additional meeting of the working group for procurement took place to direct the funds that appear to have been saved in 2013 toward the procurement of kits for liquid media-based DST for second-line TB drugs. Tool sets for calibrating MGIT960 machines will also be procured by the government within the remaining months of 2013.

Upon request from the UCDC, the project provided technical assistance on maintenance of Ukraine's TB drug supply, including the introduction of proper methods for calculating necessary buffer stocks. The project's medical director conducted a thorough consultation with UCDC representatives on methods for tracking the distribution of first- and second-line TB drugs that are financed by different groups (either the MoH or the GF) across oblasts, as well as the criteria for patient selection into the GF treatment programs.

Per Task 3.1.5, support for EQA of a culture and DST laboratory network linked to a supranational reference lab, the project has begun supporting implementation of EQA for culture tests and DST in anticipation of the large-scale DRS that will begin on November 1, 2013. The DRS is an epidemiological project designed to shed light on the shape and scope of Ukraine's MDR-TB burden. The results of a reliable DRS are essential to determine and justify the variety and volume of second-line drugs (pharmaceuticals used for the treatment of TB in cases of drug resistance) needed to control MDR-TB. These decisions should be made according to the drug resistance profile of Ukrainian MDR-TB patients. Thus, the DRS is key to setting national agendas for drug acquisition and standing drug supplies.

The protocol for conducting the DRS was developed by the WHO in late 2011. The WHO is responsible for conducting the DRS in Ukraine. Due to financial limitations, it was agreed with USAID that STbCU will be involved in developing DRS-related legislation, procuring laboratory supplies and piloting the DRS. In April 2013, a special DRS working group was formed by an official MoH order that specified the study design for Ukraine's DRS, the regional and interregional zones to be investigated, and the parties responsible for survey implementation, including the role of STbCU.

In April 2013, the project organized a tour that took national and international experts to several regions of Ukraine that were to be part of the DRS, including Donetsk oblast, Kharkiv oblast, and the city of Kyiv. The team was joined by Dr. Girts Skenders, head of the Supranational Reference Laboratory in Latvia; Dr. Marija Joncevska, regional laboratory advisor of Project HOPE; Drs. Anna Barbova and Olexander Zhurilo from the NRL; and Dr. Svitlana Cherenko from Yanovskyy National Institute for Phthisiology and Pulmonology. This expert group determined that the situation in Ukraine and the general readiness to undertake the DRS was relatively good; however, a number of potential risks factors related to the efficiency of the survey were identified. In their final report, this group outlined mechanisms for overcoming potential obstacles and bolstering the validity of the study. As the DRS protocol requires the use and evaluation of routine TB diagnostic procedures, this tour proved important not only for the DRS but also for Ukraine's laboratories in general.

In May 2013, the project launched the DRS pilot in Kharkiv and Kherson oblasts. Results from pilot data collection were analyzed during monitoring visits in August 2013 and subsequently presented at the September 13, 2013, meeting of the DRS working group. The working group discussed the laboratory and clinical aspects of the DRS, and working group members suggested some changes in the DRS protocol to better implement the DRS. Based on the results of the pilot study, the project proposed certain EQA measures that are necessary for DRS and that could also be implemented sustainably after the survey is completed. Specifically, the team recommended carrying out the DST not just in one-in-five zonal (interregional) laboratories, but also in all Level 3 laboratories, with subsequent blind rechecking performed by the interregional laboratory, NRL, and Supranational Reference Laboratory. In its negotiations with the working group on the National Order for EQA (see Task 1.1.4), the team proposed requiring the creation and maintenance of a set of relevant bacterial strains to facilitate quality control efforts for decontamination, sample preparation, preparation of liquid and solid media, and DST.

In accordance with the task order, the team has consistently worked to improve the quality of work provided by the NRL to TB services and to regional laboratories for DST. The head of the NRL carried out mentoring visits to Level 2 and Level 3 laboratories in six USAID-supported regions: Donetsk oblast, Kharkiv oblast, Odesa oblast, Kherson oblast, AR Crimea,

and the city of Kyiv. International experts on laboratory diagnostics were part of the team visiting Kyiv, Donetsk oblast, and Kharkiv oblast. After assessing the local situation in these regions, a number of recommendations were made. The project followed up by organizing repeat visits to Level 3 laboratories in Kherson oblast and AR Crimea, where the greatest difficulties in carrying out the laboratory processes necessary for the DST were observed. These visits confirmed improvements and implementation of the experts' recommendations. Quality improvement was noted in the following areas in particular:

- Internal quality assurance (IQA) of microscopic and culture tests consistently performed.
- Following SOP.
- Accurate recordkeeping.
- Provision of feedback on the quality of samples to clinicians.

As SOP violations were frequently noted in Level 2 laboratories, the head of the NRL visited these laboratories in Donetsk oblast, Kharkiv oblast, Odesa oblast, Kherson oblast, and AR Crimea. During these visits, the following errors were discovered and corrected:

- First sputum samples were not sent to Level 3 laboratories for testing with GeneXpert.
- DST was performed without quality assurance confirmation.

The mentoring team recommended closing the Level 2 laboratory in Feodosiia, AR Crimea, due to its low throughput, significant equipment shortages, and low level of biosafety.

Exhibit 5 summarizes Objective 3 accomplishments to date based on expected life-of-project results.

Exhibit 5. Objective 3 Accomplishments	
LOP Expected Results	Accomplishments To Date
Improved policy and legal environment for implementation of PMDT according to international standards.	<ul style="list-style-type: none"> • DRS MoH order based of WHO protocol developed and approved.
National guidelines for MDR-TB consistent with international standards developed.	<ul style="list-style-type: none"> • The section of the new Ukrainian TB protocol on MDR-TB case management is in line with the principles of evidence-based practice.
Develop a group of national experts to provide MDR-TB expertise.	<ul style="list-style-type: none"> • MDR TB expert panel created. Panel provides consultations during field visits and clarifies issues of PMDT on the project website's Q&A page.
Develop an external quality assurance network for culture and DST with a supranational reference lab	<ul style="list-style-type: none"> • Additional third-level laboratory included into an EQA network for culture and DST in USAID regions • 10 Level 3 laboratories eligible to perform bacterial culture and DST, according to EQA. • EQA of culture tests and DST is included in the DRS procedure in and beyond the 10 USAID-supported regions.
Improve case management of MDR TB patients	<ul style="list-style-type: none"> • MDR TB case management in CoE improved. CoE clinical practice has improved in terms of PMDT and TB IC.

Objective 4: Improve access to TB/HIV co-infection services at the national level and in USAID-supported areas.

Activity 4.1: Identify gaps in TB/HIV co-infection services and build capacity to address them.

Per Task 4.1.1, the project conducted a gap analysis of TB/HIV co-infection services. Between April 2013 and June 2013, the team, in cooperation with international partner New Jersey Medical School Global Tuberculosis Institute (GTBI), performed this investigation and developed the following recommendations:

- Develop a national order on collaboration among TB, HIV, and PHC facilities.
- Develop unified indicators for TB and HIV specialists for effective M&E.
- Decentralize TB/HIV co-infection services.
- Expand the involvement of primary health care providers in TB/HIV detection and management.
- Develop the capacity to cover needs in ART and co-trimoxazole.
- Administer isoniazid preventive treatment by HIV specialists.
- Improve monitoring of TB/HIV patients referred to different facilities. Ensure availability of contact information of both services. Facilities should issue internal orders to maintain feedback across services.
- Use NGO mobile primary health care sites for TB/HIV co-infection support, HIV testing, and sputum collection.
- Involve NGOs in TB/HIV patient follow-up and support, informing persons from risk groups about TB/HIV issues, and referring clients suspicious for TB/HIV co-infection for diagnostics and treatment.
- Review the Law on Combating HIV-Related Diseases and on Legal and Social Protection of PLWH to consider the possibility for information exchange among health professionals (TB specialists, HIV specialists, and family doctors), specifying the situations where this information must remain confidential.

Per Task 4.1.2, the team continued to address gaps in TB/HIV co-infection services by facilitating the institutionalization of international best practices in TB/HIV care. The project paid significant attention to improving integrated TB/HIV services and capacity building for specialists dealing with TB/HIV patients.

Throughout Ukraine, some patients are routinely referred to TB/HIV co-infection services while others are not. Referral systems are neither standardized nor consistently used when necessary. To ensure effective and sustainable patient referral, the project promoted the development of local regulations in a number of pilot regions (Dnipropetrovsk oblast, Kherson oblast, AR Crimea, and Kyiv city).

Mandatory TB control measures among PLWH, such as screening interviews to identify symptoms of presumptive TB, PITC, and preventative co-trimoxazole treatment for TB/HIV patients, were included in all of these regulations. These successes came as a result of six roundtable meetings with regional health administrations and representatives from AIDS centers, TB facilities, and regional PHC facilities in four regions. Importantly, each new regulation stipulates that TB specialists and HIV specialists are jointly responsible for ensuring the provision of co-infection services. PHC physicians were also encouraged to participate in the provision of these services. Such orders were approved by the regional

Champion for Resources

The Project advocated funding increases to support the provision of TB/HIV co-infection services. As a result, the Kherson *oblast* state administration decided to increase funding for new regional TB and TB/HIV programs. They also earmarked funds in the regional TB program budget for providing preventive co-trimoxazole regimens to all TB/HIV co-infected patients in the oblast.

health administrations in nine USAID-supported regions with exception of Kyiv where a document is currently being finalized.

In the last quarter, the project continued collaboration with the SIAPS project to improve the information systems used for managing TB/HIV-related services for TB patients. Specialists from both projects developed a questionnaire for mentoring teams to use while monitoring the use of the E-TB Manager in health care facilities, especially in instances of TB/HIV co-infection case management. Project specialists offered recommendations for improving the E-TB Manager components related to the management and documentation of TB/HIV co-infection. All of the project's suggestions were accepted by SIAPS, and the project will monitor the integration of these changes into the E-TB Manager system. By implementing these recommendations, Ukraine will be able to collect and make available necessary information on TB/HIV co-infection, monitoring activities, and patient referral. This will facilitate effective planning and action for controlling Ukraine's TB/HIV epidemic at the national and regional levels.

To discuss the causes of ineffective referral at the regional level, the project led 14 workshops between November 2012 and July 2013 for TB specialists, HIV specialists, and PHC specialists in USAID-supported regions. PHC specialists were included at the project's recommendation, as they are the medical practitioners primarily responsible for TB case detection and DOTS. The workshops focused on ways to improve available TB/HIV medical care and referral services for TB patients, including HIV counseling and testing for TB patients and screening for TB among HIV patients. Participants clarified region-specific mechanisms of patient referral, revealed local shortcomings of the referral systems, and reviewed region-specific regulations. Practical recommendations were offered to align regional procedures with internationally recognized standards of TB/HIV patient care.

The project made 17 mentoring visits to AIDS centers and TB hospitals in all USAID-supported regions. During these visits, 66 individuals were mentored at the workplace. Also the regional project coordinators were instructed to pay special attention to matters concerning TB/HIV co-infection during visits to PHC, such as TB case detection among PLWH and HIV testing of TB patients (see Task 4.3.1).

Among the findings from these visits was the confirmation that project-initiated screening questionnaires are being used by medical professionals in all oblast AIDS centers in USAID-supported regions (see Task 4.3.1). Project representatives also noted that patient data is being entered properly into the project-recommended table for standardized data collection on TB/HIV referral services. In Luhansk oblast, referral mechanisms and IC conditions have improved at the raion level. In all regions, the project promoted provision of immediate TB consultations, when necessary, in the same health care facility where the patient originally sought medical services. More often than not, this would mean providing TB consultation to patients at an AIDS center or a PHC facility. Such a practice is essential for the prevention of nosocomial TB transmission to PLWH. Such practices are now in place in Luhansk oblast, Kerch city (AR Crimea), Odesa oblast, and Zaporizhzhia oblast. As a result, the average time to diagnosis has decreased, as has a loss to follow-up among patients with presumptive TB. In these oblasts, isoniazid preventive courses are provided in both AIDS centers and PHC facilities.

Per Task 4.1.3, the project conducted training on TB control for HIV service providers and training in HIV diagnosis, treatment, and prevention for TB providers.

To ensure the consistency and sustainability of educational efforts related to issues of TB/HIV case management, the team is collaborating with the Ukrainian National Training Center on HIV for the purpose of certifying training curricula on TB/HIV at the National Medical Academy of Postgraduate Education.

The project developed a TB/HIV module for PHC doctors to improve integration of TB/HIV services at the *raion* level and to emphasize the involvement of PHC providers in TB/HIV case management.

In May 2013, the project reviewed training materials already in place at the National Training Center on HIV. The materials were found to be in compliance with project objectives and principles. As a new national protocol on TB/HIV is under development, planning and design of new educational materials is set to begin after its finalization and approval. In anticipation of new training materials, workshops are being held to clarify the most complicated issues of TB/HIV case management (see Task 4.1.2).

The project also developed training materials on effective follow-up and social support of TB/HIV patients for NGO staff, social workers, and psychologists.

Activity 4.2: Ensure HIV testing for TB patients and effective referral of those found to be HIV positive.

Per Task 4.2.1, the project continued to build on existing models to scale up high-quality HIV testing and referrals for TB patients. The team has developed an approach that incorporates civil society into the support systems for TB/HIV patients.

Project specialists worked with a partner, the Coalition of HIV Service Organizations, to identify the most important and productive approaches to ACSM activities. A project specialist sat on the selection committee reviewing grant applications received by the Coalition from NGOs and presented information about the needs of TB patients as a potential target audience for funded NGO activities. The Coalition offered insights on which NGOs are the most important or active at the local level, as well as the methods and activities of those organizations. As a result, the project and the Coalition were able to harmonize their respective grant requirements (see Task 1.2.1).

To analyze the efficiency of PITC among TB patients, the project promoted revision of MoH R&R forms on PITC to capture information on TB prevalence among those who undergo HIV testing (see Task 1.1.5). This will allow for a more reliable assessment of HIV prevalence among TB patients, improve the detection of dual TB/HIV infection, and hasten the initiation of proper treatment, in turn increasing overall patient survival.

To improve M&E of TB/HIV cases, the project participated in a working group on the regulatory basis for M&E in this sphere (see Task 4.3.1). The team emphasized the importance of testing not only for new cases of TB but also for other categories of TB patients, such as relapse cases and cases of MDR-TB.

On February 21-22, 2013, the project participated in a workshop supported by USAID's Improving HIV/AIDS Services among Most-at-Risk Populations in Ukraine project. The workshop gathered representatives of HIV program stakeholders to discuss coordination and scaling up the quality of HIV testing and referrals. The STbCU team recommended paying attention to the referral algorithm and explained that following HIV testing in TB hospitals, patients diagnosed with HIV should be referred to an AIDS center to ensure follow-on support to TB/HIV patients after an in-hospital phase of TB treatment.

Per Task 4.2.2, ensuring HIV testing for TB patients and effective referral of those found to be HIV positive, the project continues to promote the availability of HIV testing for TB patients and referral to appropriate services for those who are HIV-positive.

All USAID-supported regions are currently being provided with HIV tests. The ELISA test is acquired through local budgets. The cost of rapid tests for vulnerable groups is covered by various agencies in different regions. The project monitors the supply, availability, and use of ELISA tests and rapid tests in the 10 pilot regions.

The project is also promoting PITC of TB patients, as TB is the main opportunistic infection among PLWH. Information on PITC was included in the training materials for PHC providers TB management. Specialized training on PITC for TB specialists was held in AR Crimea for 28 participants. To improve the mechanisms for conducting PITC, the project organized a roundtable meeting for 22 TB and HIV specialists and PHC providers in the city of Kyiv. These locations were selected because they have the lowest coverage of PITC among TB patients.

Activity 4.3: Provide TB screening of HIV patients and referral to TB services for those with suspected cases of TB.

Per Task 4.3.1, the project continues to build on existing models for scaling up TB screening and referral for HIV patients. To increase awareness of TB among the population at risk of TB and HIV, the team supported a local NGO in providing individual consultations on symptoms of presumptive TB for approximately 100 persons at risk in Luhansk and Dnipropetrovsk oblasts and the city of Sevastopol. These clients were also provided with essential information on TB and advised to seek medical attention if symptoms develop.

The vast majority of TB referrals provided to HIV patients are handled by the same medical professionals who manage HIV service referrals for TB patients. As such, much information on project activities related to Task 4.3.1 are discussed under Task 4.2.1.

To institutionalize evidence-based TB/HIV case management, the team took an active role in revising the unified clinical protocol on TB/HIV care at the primary, secondary, and tertiary levels of health care by participating in a multidisciplinary group organized for this purpose. The project recommended the following revisions to the protocol:

- When referring patients to TB care, observe all necessary IC precautions for TB/HIV patients.
- Provide DOT-based treatment of TB/HIV co-infection.
- Clearly define the roles and responsibilities of different health care providers involved in TB/HIV care or referral processes.
- Recommend the isoniazid preventive course for all PLWH when active TB is ruled out.

- Define the term “TB screening,” to indicate a comprehensive approach to case detection that includes screening interviews to detect symptoms suspicious for TB and/or chest X-ray, and/or tuberculin tests.
- Administer ART to all TB/HIV patients, regardless of their CD-4 count.

The majority of these proposals were under consideration when the draft order was reviewed.

To streamline procedures for reporting the rate of TB screening among PLWH, the project proposed using the PEPFAR system of reporting which reports the number of PLWH who received at least one service on TB case detection. The project emphasized an evidence-based clinical approach to case detection, i.e., screening interviews rather than obsolete screening through X-rays. This led to promising results (see Task 4.3.2). During discussions of this indicator, project representatives recommended retaining it as part of the MoH M&E plan, as it is a particularly important parameter for monitoring TB/HIV service and care. Project representatives also observed that including this variable on reporting forms used in AIDS centers and PHC facilities could provide additional opportunities to monitor this indicator. Project representatives emphasized the importance of allowing access to and maintaining HIV-related components of the E-TB Manager database in AIDS centers.

The project also advocated policy reform to improve follow-up of TB/HIV cases at the central level. The following statements were included into the draft of the M&E plan:

- The parties responsible for reporting on specific indicators (TB services or AIDS services) should be clearly specified in maintaining efficient and effective M&E.
- All TB/HIV data should be desegregated by gender.
- Results on TB screening among PLWH should be specifically reported.

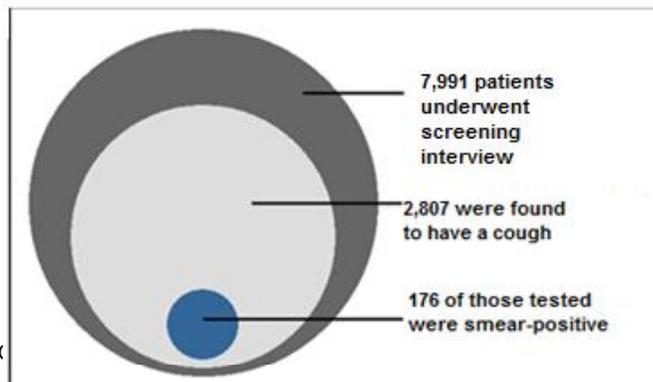
To promote these improvements, the project held a series of working meetings with UCDC and participated in a Skype conference held by UCDC with regional TB and HIV service providers.

To improve TB detection among PLWH, the project focused on activities to improve the knowledge and practices of infectious disease specialists working with HIV-positive patients. From February 2013 to June 2013, the project led three workshops for 94 HIV specialists on the topic of TB case detection in the city of Kyiv and in Odesa and Luhansk oblasts. On July 17, 2013, a similar workshop was held for 44 HIV specialists in Donetsk.

In Year 1 the project provided technical support to a total of 797 TB specialists and infectious diseases specialists at meetings and workshops on improving integrated TB/HIV services (under Tasks 4.2.2 and 4.3.1). In addition, with support, these professionals elaborated a common vision of current practical issues in TB/HIV management through roundtables.

Per Task 4.3.2, the project supports screening HIV patients for TB and referral to TB services. In May 2013, the project initiated screening for TB among PLWH through

Exhibit 6. Results of Screening Interviews



regular use of a specially designed screening questionnaire at AIDS centers in all project-supported regions. Clinical screening of PLWH is recommended by WHO as the most affordable way of TB case detection. Ukrainian specialists have not used this approach before. The project ensured that AIDS centers in have screening questionnaires that are in accordance with international recommendations.

The project also developed a TB/HIV and referral monitoring database for AIDS centers and *raion*-level HIV offices in project-assisted regions, as well as instructions for its use. This innovative tool is designed to facilitate M&E of TB/HIV care. Project monitoring coordinators from the 10 regions were instructed on the use of this database. Regional meetings and mentoring visits held for doctors also focused on instructions for managing this database and the quality of data entered, among other issues. These meetings provoked discussion on the importance of analyzing TB/HIV-related data and triggered implementation of significant follow-on actions (see Tasks 4.2.2 and 4.3.1). An additional meeting on the importance of monitoring TB/HIV care and referrals using the new database was held in Donetsk *oblast*. As a result of meetings and mentoring visits to regional AIDS centers Donetsk in August 2013, the staff of the AIDS center began using the database.

Monitoring of TB/HIV services and referrals using the new database began in May 2013. Since that time, screening data on 8,013 PLWH in all 10 USAID-supported regions has been entered into the database. These patients have been screened using one or more WHO-recommended methods. A total of 7,991 individuals have undergone a screening interview to detect symptoms of presumptive TB. Of these, 2,807 were found to have a cough and were given a sputum smear test; 176 (6.3 percent) of those tested were smear-positive. Thus, the percentage of presumptive TB cases that were found to have positive smear microscopy results among this risk group significantly exceeds the overall level of TB case detection by microscopy at the PHC level of 1-3 percent. This confirms the efficiency of selecting patients eligible for specific TB tests based on a screening interview. This is of particular importance, as TB/HIV patients expectorate TB bacteria much less reliably than HIV negative patients.

The database is also used for documenting the number of patients who received preventive treatment with isoniazid and co-trimoxazol. Now it is confirmed that during the reporting period, 1,774 (22.1 percent) and 2,066 (24.3 percent) of patients under observation received each treatment, respectively.

Exhibit 7 summarizes Objective 4 accomplishments to date based on expected life-of-project results.

Exhibit 7. Objective 4 Accomplishments	
LOP Expected Results	Accomplishments to Date
Identify the gaps for TB/HIV integrated service delivery and referral systems and develop a plan for addressing the gaps.	<ul style="list-style-type: none"> • Gap analysis of TB/HIV integrated services has been performed.
Improve the capacity of local organizations provided with technical assistance for HIV and TB/HIV-related activities capacity.	<ul style="list-style-type: none"> • 14 seminars were held in USAID-supported regions • 797 TB, HIV, and PHC specialists received updated information on TB/HIV through a training and workshops.
Improve the policy environment among local organizations to support HIV and TB/HIV-related activities.	<ul style="list-style-type: none"> • National protocol on TB/HIV case management has been developed. • Advocacy for improving TB/HIV related activities reached 148 key decision-makers at 12 local roundtable meetings.

Exhibit 7. Objective 4 Accomplishments	
LOP Expected Results	Accomplishments to Date
Adapt and implement the HIV testing and referral model for TB patients at USAID-assisted sites.	<ul style="list-style-type: none"> • The project advocates making PITC mandatory for all TB patients.
Increase TB screening and referral model for HIV-positive patients implemented at USAID-assisted sites.	<ul style="list-style-type: none"> • TB screening and referral model for HIV-positive patients adapted for implementation in USAID-supported regions. • TB screening is being performed for HIV patients by means of evidence-based methods.

II. SCHEDULES

- As the national protocol on TB case management is currently being updated, holding TOT for professors of family medicine was postponed until Year 2 so as to provide TOT participants with the most the up-to-date information.
- The project is procuring GeneXpert machines. The timeline was shaped by the fact that the project's sole recipient, UCDC, is a newly developed entity that replaced the original recipient, which was dissolved during Year 1. UCDC secured customs authorization in August 2013. Prior to this, UCDC was unable to accept or even confirm its ability to accept this equipment.
- TB culture and DST training sessions originally scheduled for September 2013 were postponed until Year 2 as the heads of Level 3 laboratories had just received training on these issues from a GF-supported program. Postponing the training will enable the project to incorporate findings from the ongoing countrywide DRS (see Task 3.1.5) and relevant information about the role of the GeneXpert® into the training module.
- A grant agreement with the Ukrainian Red Cross Society was postponed due to delayed approval of the grant manual. To date, the grant description and budget have been finalized and submitted to the parties.
- To better address issues on access to quality TB/HIV services via small grants, the project studied the role of NGOs in TB/HIV service provision as a part of TB/HIV gap analysis conducted by GTBI. The results were considered when developing the small grants programs and solicitations. The award of grants was postponed to accommodate the scheduled TB/HIV gap analysis and will be implemented early in Year 2.

III. CHALLENGES

During Year 1, the team worked to overcome a number of challenges, described below.

- The legal basis of Ukraine's health care system lags behind in instituting evidence-based practices. As a result, implementation of international best practices at the regional level is considerably delayed. In Year 1, project efforts were directed at accelerating legal reform through legal analysis, participation in government working groups, development of recommendations and revisions to existing and new legislation, and assistance to supported regions in developing local regulations to implement national policies (e.g., revision of the national protocol on TB case management, introduction of EQA in sputum microscopy through local orders, development of R&R forms for MDR-TB, and TB/HIV case management).
- Limited government funding for the NTP discourages implementation of WHO-recommended approaches. The project is supporting conceptualization and implementation of cost-effective approaches (e.g., use of natural ventilation as an important IC measure and application of low-cost EQA methods in the TB laboratory network).
- State counterparts (namely the State Service on TB/HIV and Other Socially Dangerous diseases and UCDC) lack adequate knowledge and expertise to fully implement the NTP. To build their capacity in supportive supervision and data analysis, the project has started involving their representatives in field visits.
- The Dnipropetrovsk CoE does not yet have sufficient support or recognition at the local and national level and from other oblast authorities. The project is promoting the CoE through educational activities, training of CoE staff, attracting TB experts from the national and regional level, expanding CoE training services to other regions of Ukraine, and helping the CoE implement up-to-date IC and MDR-TB case management practices.

The following key lessons were learned during Year 1:

- The project should be flexible and apply a combination of top-down and bottom-up approaches to achieve best results. For example, gaps in national legislation can be overcome through regulatory adjustments at both the regional and local levels.
- National TB institutions (e.g. State Service on TB/HIV and Other Socially Dangerous diseases, UCDC, and the National TB Institute) should be involved in the project's training interventions to achieve sustainable results and systemic changes.
- National TB institutions' personnel capacity should be strengthened in the areas of effective national TB program management, partner coordination, monitoring and data analysis, and decision-making. In general, medical staff are receptive to new knowledge and skills and are ready to implement new approaches and best practices.
- Cost-effective approaches in TB control can be successfully implemented.

ANNEXES

Annex A. Performance Monitoring and Evaluation Report

Annex B. Qualitative Baseline Assessment of Local TB Control Measures

Annex C. List of Sub-Awards

ANNEX A. PERFORMANCE MONITORING AND EVALUATION REPORT

Exhibit A-1. Strengthening Tuberculosis Control in Ukraine (STbCU) Project Indicators

Indicator	Frequency	Reporting Period	Baseline	Year 1 (2013) Targets	Year 1 (2013) Results	
Project Objective: Decreased TB burden, contributing to a reduction of TB morbidity and mortality, decreasing the burden of TB through specific quality assurance and systems strengthening measures for routine TB services, and MDR-TB and HIV/TB co-infection						
Project Intermediate Result (PIR) 1. Improved quality and expanded availability of the WHO-recommended DOTS-based TB services in USAID-supported areas						
1.	TB incidence (notification rate) in USAID-supported areas, per 100,000	Annually	January – December 2012	72.9	71.0	73.3
2.	TB mortality rate in USAID-supported areas, per 100,000	Annually	January – December 2012	17.9	16.9	17.5
3.	Treatment success rate in USAID-supported areas (cohort indicator)	Annually	January – December 2011	54.2%	60%	48.5%
4.	Default rate in USAID-supported areas (cohort indicator)	Annually	January – December 2011	9.4%	9.0%	8.6%
5.	Treatment success rate nationally (cohort indicator)	Annually	January – December 2012	56.6%	60.0%	55.0%
6.	Treatment success rate in non-USAID-supported areas (cohort indicator)	Annually	January – December 2012	67.1%	65.0%	63.1%
7.	Percent of laboratories in USAID-assisted areas performing TB microscopy with over 95% correct microscopy results	Annually	January – December 2012	72.3%	77.0%	78.6%
8.	Smear microscopy TB detection at the PHC level	Annually	January – December 2012	2.2%	2.5%	2.6%
9.	Percent of smear-positive individuals with positive TB culture	Annually	January – December 2012	46.0%	48.0%	54.3%
10.	Percent of estimated number of new TB cases that were detected under DOTS	Annually	January – December 2011	73.0%	73.0%	86%
11.	Percent of public sector TB treatment facilities with health care professionals trained in TB case detection and treatment based on DOTS ¹	Annually	April 2012 – September 2013	0%	30.0%	32.8%
12.	Number of health care workers who successfully completed an in-service training program (PEPFAR H2.3.D)	Quarterly	April 2012 – September 2013	0	700	790

¹ Reflected in the Task Order as indicator “Number of people (medical personnel, health workers, community workers, etc.) trained on DOTS with USG funding”

	Indicator	Frequency	Reporting Period	Baseline	Year 1 (2013) Targets	Year 1 (2013) Results
13.	Percent of Ukrainians with access to DOTS services that meet international standards	Annually	January – December 2012	50.0%	50.0%	50.7%
<i>PIR 2. Creating a safer medical environment at the national level and in USAID-supported areas</i>						
14.	TB incidence among health care workers, per 10,000	Annually	January – December 2012	7.5	7.0	7.2
15.	Number of facilities with proper infection control practices in place	Annually	April 2012 – September 2013	6	16	24
16.	Proportion of health care workers that are knowledgeable on proper infection control practices	Annually	April 2012 – September 2013	0%	20.0%	9.7%
<i>PIR 3. Build capacity to implement PMDT programs for multidrug-resistant/extensively drug-resistant TB in USAID-supported areas</i>						
17.	MDR-TB treatment success rate among new MDR-TB cases (cohort indicator) in USAID-supported areas	Annually	January – December 2010	36.6%	40.0%	46.6%
18.	MDR-TB default rate among new MDR-TB cases (cohort indicator)	Annually	January – December 2010	12.3%	9.1%	12.7%
19.	Percent of Level 3 laboratories in targeted regions performing quality-assured culture and DST	Annually	January – December 2012	64.0%	67.0%	71.4%
20.	Percent of health facilities with proper MDR-TB management	Annually	April 2012 – September 2013	0%	28.0%	30.0%
21.	Percent of Ukrainians in USAID-assisted areas with access to PMDT that meets WHO international standards	Annually	January – December 2012	50.0%	50.0%	50.7%
<i>PIR 4. Improve Access to TB/HIV Co-infection Services at the national level and in USAID-supported areas</i>						
22.	Percentage of TB patients who had an HIV test result recorded in the TB register among the total number of registered TB patients in USAID-supported sites	Semi-annually	January – December 2012	80.0%	80.0%	87.4%
23.	Proportion of newly diagnosed HIV and TB individuals who undergo diagnostic and counseling services for dual infection in USAID-supported sites	Semi-annually	January – December 2012	80.0%	80.0%	84.3%
24.	Number of individuals provided with technical assistance for HIV-related capacity building (PEPFAR indicator)	Semi-annually	April 2012 – September 2013	0	350	797
25.	Number of individuals provided with technical assistance for HIV-related policy development (PEPFAR indicator)	Semi-annually	April 2012 – September 2013	0	75	148

	Indicator	Frequency	Reporting Period	Baseline	Year 1 (2013) Targets	Year 1 (2013) Results
26.	Proportion of TB patients who are counseled and tested for HIV at USAID-assisted sites	Semi-annually	January – December 2012	80.0%	80.0%	87.4%
27.	Number of individuals who received testing and counseling (T&C) services for HIV and received their test results	Semi-annually	October 2012 – September 2013	12,000	13,200	14,140
28.	Percent of HIV-positive patients who were screened for TB in HIV care or treatment settings (PEPFAR C2.4.D)	Semi-annually	October 2012 – September 2013	80.0%	80.0%	81.6%
29.	Number of HIV-positive adults and children receiving a minimum of one clinical service (PEPFAR C2.1.D)	Semi-annually	October 2012 – September 2013	0	67,000	76,979
30.	Number of eligible adults and children provided with a minimum of one care service (PEPFAR C1.1.D)	Semi-annually	October 2012 – September 2013	0	67,100	77,079

Comments on the Indicators

PIR 1. Improved quality and expanded availability of the WHO-recommended DOTS-based TB services in USAID-supported areas

Indicator 1. The TB incidence rate in USAID-supported areas in 2012 reached 73.3 cases per 100,000 population, which exceeded the project's target of 71.0 cases per 100,000, as well as the baseline year incidence rate of 72.9 cases per 100,000 population. The increased incidence rate may be due to improved TB diagnostic procedures rather than to the real growth of infectious process.

Indicator 2. The mortality rate in USAID-supported areas in 2012 came to 17.5 cases per 100,000 population in 2012, exceeding the 16.9 case target by 4 percent but nevertheless 2 percent lower than the baseline of 17.9 cases.

Indicators 3-6. These indicators measure the treatment success rate in USAID-supported areas (cohort indicator), the default rate in USAID-supported areas (cohort indicator), and the treatment success rate nationally in non-USAID-supported areas (cohort indicator) (Exhibit A-2).

The project conducted an analysis to evaluate the reliability of these state statistics. At first glance, treatment success rates appear higher in the western regions than in the eastern regions, although most of the eastern regions have been covered by USAID TB-control programs for the past few years. However, a more detailed analysis revealed a considerably lower level of data reliability in non-USAID-supported regions.

Thus the data from USAID-supported regions indicates that the capacity of local TB R&R systems in these areas has been systematically and sustainably improved. The result of that improvement is monitoring and reporting practices that are incrementally more reliable than previously.

Inconsistent drug supplies affect treatment outcomes more than any other factor. The seriousness of this problem became especially apparent in 2011, when a shortage of both first- and second-line drugs arose and remained unresolved for most of the year. Despite these historical barriers to successful TB control, it is premature to conclude that weaknesses in the drug supply chain are solely responsible for the low levels of treatment efficiency. Analysis of treatment effectiveness and the default rate (Exhibit A-3) indicates that treatment efficacy is being affected by factors independent of the drug supply chain. The irregular fluctuation occurred during different quarters and was not coincident in different oblasts. Only in Luhansk oblast did treatment effectiveness dramatically decline during the last half of 2011, when the drugs shortage was most acute. It is worth noting that the occurrence of treatment default varies more significantly and irregularly than treatment success; and in Kharkiv and Kherson oblasts, the default rate was even higher in 2010, when the supply at least of the first-line drugs was sufficient (Exhibit A-4).

Exhibit A-2. Treatment Outcome Disaggregated by Oblast¹

Region	Cured (Percent)	Completed (Percent)	Treatment Success (Percent)	Death (Percent)	Failure (Percent)	Default (Percent)
AR Crimea	45.1	2.2	47.3	18.8	24.1	6.5
Dnipropetrovsk oblast	38.4	9.0	47.4	15.8	23.8	9.5
Donetsk oblast	49.2	2.5	51.7	18.0	24.2	3.8
Kharkiv oblast	48.8	2.9	51.7	11.6	22.7	8.8
Kherson oblast	26.2	11.2	37.3	16.4	35.8	7.2
Luhansk oblast	45.1	5.8	50.8	19.3	15.5	12.5
Odesa oblast	33.8	11.5	45.3	14.0	25.9	9.9
Zaporizhzhia oblast	35.8	12.7	48.5	18.3	18.3	10.5
Kyiv city	42.8	11.0	53.8	13.2	17.0	11.4
Sevastopol city	44.9	2.6	47.4	10.3	24.4	15.4
USAID-supported	41.5	7.0	48.5	16.4	23.2	8.6
Non-USAID-supported	54.0	1.2	67.7	11.3	14.8	6.6
Ukraine	46.1	8.9	55.0	14.1	19.5	7.5

¹Source: UCDC

Exhibit A-3. Dynamics of the Treatment Success Rate by Quarter

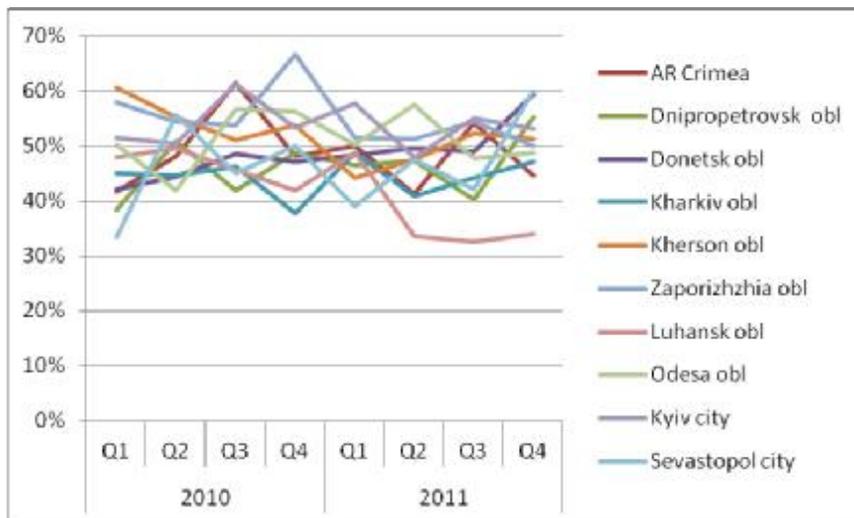


Exhibit A-4. Dynamics of Treatment Effectiveness by Quarter

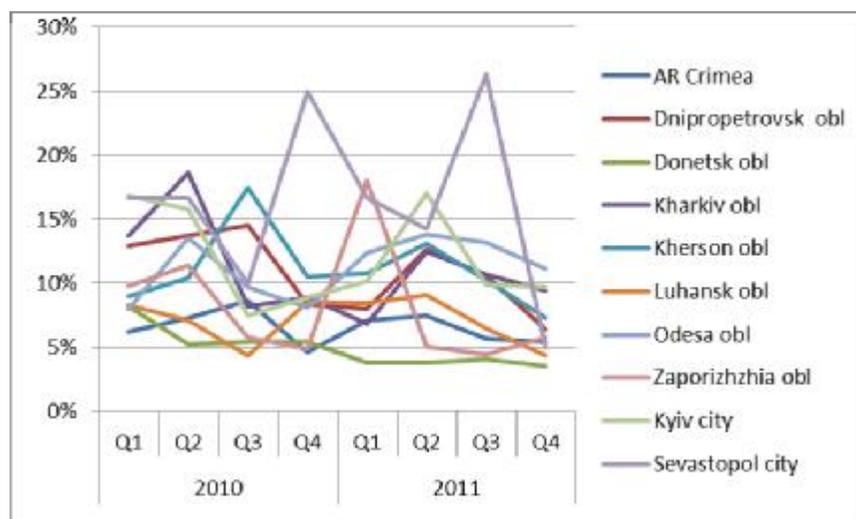


Exhibit A-5. TB Treatment Outcomes Disaggregated by Gender and Oblast

Region	Cured (Percent)		Completed (Percent)		Treatment Success (Percent)		Death in Cohort (Percent)		Failure (Percent)		Default (Percent)	
	M	F	M	F	M	F	M	F	M	F	M	F
Dnipropetrovsk oblast	38.8	41.6	8.7	9.0	47.5	50.6	15.6	15.7	24.1	20.4	9.6	8.6
Donetsk oblast	49.8	47.5	2.7	2.2	52.5	49.7	17.8	18.6	23.8	25.5	3.8	3.8
Kharkiv oblast	30.1	43.6	12.0	10.0	42.1	53.6	15.8	9.3	27.0	22.9	9.6	10.7
Kherson oblast	35.4	36.9	13.8	9.7	49.3	46.6	18.3	18.4	16.4	23.3	11.2	8.7
Luhansk oblast	25.2	29.1	9.9	14.9	35.1	43.9	16.4	16.2	39.5	25.0	5.8	11.5
Odesa oblast	42.9	50.2	6.1	4.9	49.1	55.1	19.6	18.5	15.7	15.2	14.1	8.6
Zaporizhzhia oblast	46.7	54.2	2.8	3.4	49.5	57.6	12.7	8.5	22.6	22.9	9.9	5.9
AR Crimea	44.3	47.4	1.8	3.5	46.1	50.9	18.3	20.2	24.3	23.7	7.5	3.5
Kyiv city	42.0	45.2	9.7	14.3	51.7	59.5	15.0	9.5	16.6	17.5	11.6	10.3
Sevastopol city	42.0	50.0	4.0	0.0	46.0	50.0	10.0	10.7	30.0	14.3	12.0	21.4
USAID-supported	40.6	44.6	6.8	7.2	47.5	51.7	16.8	15.6	23.6	21.5	8.8	7.9

█ - P-value < 0.05

The data obtained in USAID-supported regions were also disaggregated by gender (Exhibit A-5). This revealed that treatment success is higher among female patients. This pattern is explained by the findings of a Year 1 project survey that explored gender-specific characteristics of TB patients' behaviors. The survey showed that women tend to seek care with presumptive TB symptoms earlier, on average, than men. It also revealed that women are more likely than men to remain adherent to TB treatment. Despite these differences in behavior, differences observed in the death rate and treatment failure between genders are statistically insignificant.

Indicator 7. The proportion of laboratories in USAID-assisted areas performing TB microscopy with over 95 percent correct results was 78.6 percent, exceeding the target of 77.0 percent. Ukraine's national regulations stipulate the number of clinical laboratories eligible to perform smear sputum tests according to the size of the population in the region. In reality, these regulations are not always followed. For example, in Odesa *oblast*, the real number of laboratories exceeds the recommended number by 11. In Donetsk *oblast*, the number of laboratories that underwent EQA is within the recommended number but exceeds the number which that are officially recognized. As EQA is performed annually, the data available to date illustrate the results of rounds performed in 2012 (see Exhibit A-6). Data from Luhansk *oblast* were not included because in 2012 the routine EQA process was not in place. The local order on EQA in this region was endorsed in August 2013.

Exhibit A-6. EQA results in USAID-supported regions

Region	Maximum number of laboratories recommended by national regulations	Actual number of laboratories in the region	Number of laboratories that participated in EQA	Number of laboratories performing TB microscopy with over 95% correct results	Percent of laboratories performing TB microscopy with over 95% correct results
Dnipropetrovsk <i>oblast</i>	36	36	36	36	100%
Donetsk <i>oblast</i>	80	70	77	75	97%
Kharkiv <i>oblast</i>	40	40	40	39	98%
Kherson <i>oblast</i>	31	24	24	24	100%
Odesa <i>oblast</i>	35	46	32	8	17%
Zaporizhzhia <i>oblast</i>	37	28	26	22	79%
AR Crimea	25	—	16	9	56%
City of Kyiv	26	26	26	25	96%
City of Sevastopol	7	6	6	6	100%

Indicator 8. The smear microscopy TB detection rate at the PHC level in USAID-supported regions during the reporting period came to 2.6 percent and met the Year 1 target. It also significantly exceeds the Ukrainian average of 1.4 percent, as well as the average in non-USAID-supported regions of 0.84 percent. The disaggregation by region is presented in Exhibit A-7.

Exhibit A-7. Smear microscopy TB detection in the USAID-supported regions

Region	2011 (Percent)	2012 (Percent)	2013, first half (Percent)
AR Crimea	2.7	3.0	3.4
Dnipropetrovsk <i>oblast</i>	3.0	3.7	4.2
Donetsk <i>oblast</i>	4.2	4.4	5.2
Kharkiv <i>oblast</i>	1.1	1.3	1.2
Kherson <i>oblast</i>	3.7	4.4	5.2
Luhansk <i>oblast</i>	1.3	1.3	1.2
Odesa <i>oblast</i>	1.4	1.9	1.6
Zaporizhzhia <i>oblast</i>	2.1	2.3	2.3
Kyiv	3.1	3.1	6.2
Sevastopol	2.9	3.4	2.6
Average USAID-supported regions	2.2	2.6	2.9

This confirms the sustainability of the improvements achieved through project activities. Still, this level is significantly lower than what the WHO recommends. In response, the project is focusing not only on lab performance, but also on improper patient selection at the PHC level as areas where significant improvements need to be made. This approach is justified by the extremely high levels of saliva samples frequency in PHC lab logbooks in some *oblasts*, indicating systemic over-selection of

patients. For instance, in Kharkiv oblast, this level in 2012 was 26.5 percent (CI 25.3-26.8 percent).

Indicator 9 records the percentage of smear-positive individuals with positive TB culture. Significant progress in laboratory confirmation of TB diagnosis (54.3 percent) exceeds the target rate by 18 percent, indicating improved laboratory performance.

Indicator 10 records the percentage of the estimated number of new TB cases that were detected under DOTS. The project used the official data that is presented annual in the WHO TB global report. The project established a target of 73.0 percent, as recommended by WHO for 18 high-burden countries in European region, including Ukraine. The data presented in the official report in 2012, 86.0 percent, exceeds the target.

Indicator 11 records the percentage of public sector TB treatment facilities with health care professionals trained in TB case detection and treatment based on DOTS. Project training built the capacity of TB doctors and laboratory specialists from 23 out of 70 TB facilities in USAID-supported regions. These trained staff shared information among their colleagues and were also involved in mentoring and providing TB services according to DOTS strategy requirements.

Indicator 12 records the number of health care workers who successfully completed an in-service training program. The Qualitative Baseline Assessment of Local TB Control Measures conducted by the project in July-August 2012 showed that Ukraine's low TB treatment efficiency rate is due in large part to delays in diagnosis and low levels of treatment adherence during the continuation treatment phase. Treatment adherence is particularly problematic among TB patients who receive TB treatment in PHC facilities; therefore, the knowledge and practical skills of PHC medical workers play a crucial role in determining the level TB treatment efficiency in the region. These health care workers are key to the achievement of both national and project indicators. The percent of smear-positive TB patients among newly diagnosed cases is another indicator that relies on the knowledge and practical skills of PHC and family physicians, as they are the ones who will first interact with potential TB cases and refer them to smear screening. It is worth noting that nearly all TB specialists were trained as a part of the Global Fund project on TB, whereas the majority of PHC medical workers were never offered such training. STbCU decided to concentrate in Year 1 on training medical professionals working in PHC facilities and laboratory technicians who perform sputum smear microscopy (see Exhibit A-8).

The largest number of training sessions per region was held in Dnipropetrovsk oblast at the Dnipropetrovsk CoE (19 training events for 337 specialists from all USAID-supported regions). TB IC training sessions were hosted by the Donetsk oblast TB dispensary, as it is currently the only TB facility in Ukraine that is able to demonstrate proper environmental control practices. During Year 1, three international training events were held as well: one in Dushanbe, Tajikistan, and two in Vladimir, Russia (see Exhibit A-9).

Exhibit A-8. Number of Trained Specialists by Specialty and Work Venue

Specialty	Region										Total
	AR Crimea	Dnipropetrovsk oblast	Donetsk oblast	Zaporizhzhia oblast	Luhansk oblast	Odessa oblast	Sevastopol City	Kharkiv oblast	Kherson oblast	Kyiv City	
PHC doctors	32	111	1	45	28	29	44	43	61	34	428
TB specialists (doctors & nurses)	34	6	3	6	5	7	3	61	6	5	136
Lab specialists	8	35	1	10	9	1	2	31	12	14	123
HIV specialists	-	-	-	-	-	1	-	-	-	4	5
Epidemiologists	7	2	7	6	34	9	2	10	4	15	96
Engineers	-	-	1	-	1	-	-	-	-	-	2
Total	81	154	13	67	77	47	51	145	83	72	790

Exhibit A-9. Training Activities by Location

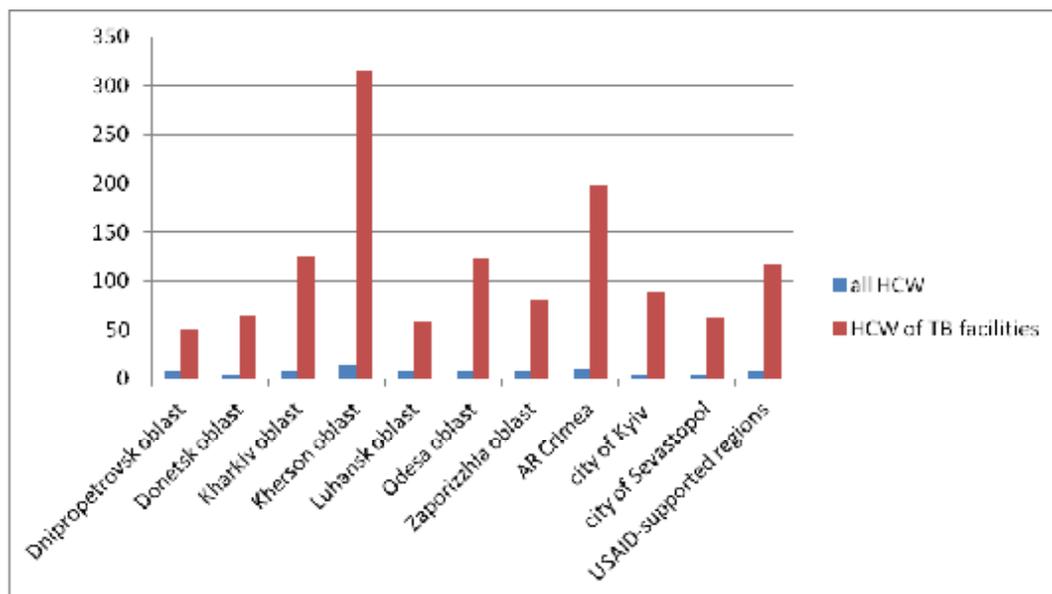
Name of Training	Location	No. of Trainers	No. of Trainees
TB case management in PHC facilities	Dnipropetrovsk CoE	10	206
	Kherson	2	40
	Sevastopol	2	43
	Kharkiv	1	28
	Zaporizhzhia	1	19
	Kyiv city	1	34
	Luhansk	1	25
	Odesa	1	24
Study tour on "Implementation of internationally recognized approaches to TB control in Ukraine"	Donetsk-Luhansk	1	10
TB detection and diagnostics by sputum smear microscopy; quality control of investigations	Dnipropetrovsk CoE	7	83
	Kyiv	1	12
TB infection control in medical facilities of Ukraine	Donetsk training center	5	99
Prevention of nosocomial TB transmission	International Training Center on TB IC, Vladimir, Russia	1	5
Engineering aspects of nosocomial TB transmission risk reduction; design, installation, balance, commission, and maintenance of ventilation systems	International Training Center on TB IC, Vladimir, Russia	1	2
System of quality control for TB laboratory diagnostics	Kharkiv	1	10
TB microbiological diagnostics; quality control of investigations	Kharkiv	1	14
MDR-TB case management	Dnipropetrovsk CoE	2	48
	Kharkiv	2	56
Rapid TB/MDR-TB diagnostics by GeneXpert	Dushanbe	1	6
Provider-initiated counseling and testing on HIV	Simferopol, AR Crimea	1	26

Indicator 13 records the percentage of Ukrainians with access to DOTS services that meet international standards. In 2011, 50 percent of the population was taken as a baseline. In 2012, DOTS coverage in Ukraine was at 50.7 percent. The slight increase reflects a population drop in the western regions, where access to DOTS is limited.

PIR 2. Creating a safer medical environment at the national level and in USAID-supported areas

Indicator 14 records the incidence rate of TB among health care workers. A slight decline against the baseline was observed (7.2 per 10,000 against 7.5 per 10,000). At the same time, in 2012, the average incidence rate of TB among HCW employed in TB units was 16.2 times higher than the average incidence among HCW in all facilities (116.7 per 10,000 and 7.2 per 10,000, respectively). The most serious situation can be seen in Kherson *oblast*, where incidence rates reached 316.4 per 10,000 and 14.6 per 10,000, respectively. In AR Crimea, the occupational risk is also

Exhibit A-10. TB Incidence Rate among All HCW and HCW of TB Facilities, Per 10,000



elevated compared to other regions (10.7 for all HCW and 197.6 for HCW for TB facilities; see Exhibit A-10).

Indicator 15 records the number of facilities with proper infection control practices in place. With project support, TB IC plans have been developed at the following facilities:

- Dnipropetrovsk oblast: Krivyy Rih city TB dispensary and the central oblast AIDS center
- Luhansk oblast: Slovyanoserbksk TB hospital and the oblast AIDS center
- Kharkiv oblast: Kharkiv oblast TB dispensary and AIDS center
- Kherson oblast: Kherson oblast TB dispensary
- Odessa oblast: Odessa oblast TB dispensary
- Zaporizhzhia oblast: Zaporizhzhia oblast TB dispensary and AIDS center

- City of Kyiv: Kyiv’s Central TB hospital;
- City of Sevastopol: City of Sevastopol’s Central TB hospital.

Beyond project activities, the Donetsk oblast SES, together with the Donetsk oblast TB dispensary encouraged by project advocacy and educational activities, provided technical support in development of IC plans in six TB facilities: Dzerzhinsk, Slovyansk, Makiivka, Kostyantynivka, Kramatorsk, and Starobeshivka.

When the project began, TB IC plans were already established at six facilities in USAID-supported regions:

- Dnipropetrovsk oblast: Dnipropetrovsk oblast TB dispensary
- Donetsk oblast: Donetsk oblast TB dispensary, city TB facility in Donetsk, TB facilities in Shakhtarsk, Volnovakha, and Horlivka

Indicator 16 records the proportion of health care workers that are knowledgeable on proper infection control practices. To assess HCWs’ knowledge, the project repeated the survey conducted at the start of the project at the end of Year 1. The number of HCWs who demonstrated essential IC knowledge and practice had increased to 9.7 percent but still fell short of the target of 20.0 percent. This could be due to discrepancies between the WHO approaches promoted by the project and administrative pressure in some HCW workplaces to conceal the real level of the occupational risk. This type of pressure slows implementation of proper IC knowledge and practice. In response, the project advocated political changes at the local level, i.e. funds allocations for IC measures, and SES mentoring aimed at proper implementation of evidence-based IC practices.

A significant increase in knowledge of proper individual respiratory protection was achieved in Year 1. Knowledge of administrative IC measures also showed a statistically significant increase. The baseline level of knowledge of environmental control approaches was high, thus the increase was not as impressive. The proportion of respondents who demonstrated excellent knowledge on all approaches and correctly answered all questions increased significantly in accordance with the Student’s t-criterion (see Exhibit A-11).

Exhibit A-11. Increase in HCW Knowledge and Practices

Knowledge or Practice	2012 (Percent)	2013 (Percent)	Increase (Percent)
Administrative approach	2.7	9.1	+ 6.4
Environmental approach	30.9	33.3	+ 2.4
Individual protection and respiratory hygiene	2.4	19.4	+ 17.0
Excellent knowledge on all approaches	0	3.4	+3.4
Essential knowledge and practice	0	9.7	+9.7

 = P-value < 0.05

PIR 3. Build capacity to implement PMDT programs for multidrug-resistant/extensively drug-resistant TB at the national level and in USAID-supported areas

Indicators 17-18 record MDR-TB treatment outcomes among new MDR-TB cases (cohort indicator). As in the case of drug-susceptible TB, the rate of treatment success was high among female patients, and the difference was even more pronounced. The gender difference in the frequency of unfavorable outcomes was statistically insignificant (Exhibit A-12).

Exhibit A-12. MDR TB Treatment Outcomes Disaggregated by Gender and Oblast

Region	Cured (Percent)		Completed (Percent)		Treatment Success (Percent)		Death in Cohort (Percent)		Failure (Percent)		Default (Percent)	
	M	F	M	F	M	F	M	F	M	F	M	F
Dnipropetrovsk oblast	37.4	47.8	2.0	6.5	39.4	54.3	27.3	17.4	5.1	6.5	21.2	15.2
Donetsk oblast	50.0	59.6	4.7	3.8	54.7	63.5	12.8	15.4	14.2	9.6	13.5	11.5
Kharkiv oblast	30.2	40.0	18.9	32.0	49.1	72.0	28.3	16.0	5.7	4.0	7.5	4.0
Kherson oblast	21.1	45.5	23.7	9.1	44.7	54.5	23.7	27.3	0.0	0.0	23.7	9.1
Luhansk oblast	16.7	57.1	13.3	0.0	30.0	57.1	46.7	28.6	3.3	0.0	16.7	14.3
Odesa oblast	26.1	70.0	4.3	10.0	30.4	80.0	56.5	20.0	4.3	0.0	8.7	0.0
Zaporizhzhia oblast	35.0	30.8	0.0	7.7	35.0	38.5	40.0	23.1	5.0	15.4	15.0	23.1
AR Crimea	25.0	57.1	0.0	0.0	25.0	57.1	12.5	14.3	25.0	14.3	25.0	14.3
Kyiv city	38.7	45.5	19.4	0.0	58.1	45.5	9.7	27.3	6.5	9.1	16.1	18.2
Sevastopol city	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
USAID-supported	37.0	50.5	8.6	8.8	45.7	59.3	24.2	18.7	8.0	7.1	16.0	12.1

 = P-value < 0.05

Indicator 19 records the percentage of Level 3 laboratories in the targeted regions performing quality assured culture and DST came to 71.4 percent against a target of 67.0 percent. In 2012, oblast TB dispensaries in oblast Level 3 laboratories successfully underwent EQA. The remaining Level 3 laboratories (one in Dnipropetrovsk oblast and three in Donetsk oblast), which were recently designated Level 3, have not been provided with national EQA, although tests were conducted by the oblast Level 3 laboratories.

Indicator 20 records the percentage of health facilities with proper MDR-TB management. To evaluate the quality of MDR-TB case management, the project assessed the work of MDR-TB councils in each USAID-supported region. The MDR-TB council is an *oblast*-level consultative board of specialists who are responsible for setting the diagnosis of MDR-TB, prescription of treatment, monitoring drugs stock-outs, and supervising doctors regarding treatment monitoring, side effects management, and registration. Although MDR TB councils are mentioned in Ukrainian regulations as being responsible for MDR-TB diagnostics and treatment, there is no national legislation specifying the functions of the councils in implementation and monitoring of proper MDR-TB case management. Therefore, the project considered case management in the regional TB facilities to be proper if at

least three of four criteria were met by the local council (see exhibit A-13). The best result was achieved in compliance of treatment regimens with national protocols (70 percent). Unfortunately, only three facilities (Donetsk, Luhansk, and Odesa oblasts) were found to be implementing proper treatment monitoring, while in the rest, the required examinations were not performed in time and/or the course of treatment was being needlessly prolonged or shortened.

Exhibit A-13. Quality of MDR-council operation

Region	Proper registration and timely treatment provision (within seven days after obtaining DST results)	Compliance of treatment regimens with national protocols	Compliance with local second-line drug stock-outs	Proper treatment monitoring	Average value per region
Dnipropetrovsk oblast	no	yes	no	yes	50%
Donetsk oblast	yes	yes	yes	yes	100%
Kharkiv oblast	no	yes	no	no	25%
Kherson oblast	no	yes	yes	no	50%
Luhansk oblast	yes	yes	yes	yes	100%
Odesa oblast	yes	yes	yes	yes	100%
Zaporizhzhia oblast	no	no	no	no	0 ¹
AR Crimea	no	no	no	no	0 ¹
City of Kyiv	no	no	no	no	0 ¹
City of Sevastopol	yes	yes	no	no	50%
Average by the criterion	40%	70%	40%	30%	48%

NOTE: 0 = The criterion was not assessed.

Indicator 21 records the percentage of Ukrainians in USAID-assisted areas with access to PMDT that meets WHO international standards. See the explanation of Indicator 13.

Indicator 22 records the percentage of TB patients who had an HIV test result recorded in the TB register among the total number of registered TB patients in USAID-supported sites in Year 1. Against a target of 80.0 percent, the project recorded a result of 87.4 percent. The disaggregation by region is presented in Exhibit A-14.

Exhibit A-14. Percentage of TB Patients who Had an HIV Test Result Recorded, 2012

Region	All new TB cases	Cases in which the results of HIV testing were registered	Percentage of cases in which the results of HIV testing were registered
Dnipropetrovsk <i>oblast</i>	4,191	3,343	79.8%
Donetsk <i>oblast</i>	3,991	3,879	97.2%
Kharkiv <i>oblast</i>	1,765	1,669	94.6%
Kherson <i>oblast</i>	1,696	1,543	91.0%
Luhansk <i>oblast</i>	2,440	2,369	97.1%
Odesa <i>oblast</i>	3,129	2,631	84.1%
Zaporizhzhia <i>oblast</i>	1,543	1,458	94.5%
AR Crimea	1,472	959	65.1%
Kyiv city	1,564	1,138	72.8%
Sevastopol city	407	401	98.5%
USAID-supported regions	22,198	19,390	87.4%

Indicator 23 records the proportion of newly diagnosed HIV and TB individuals who undergo diagnostic and counseling services for dual infection in USAID-supported sites came to 84.3 percent against 80.0 percent target rate. During the reporting period, 26,488 of 31,432 newly diagnosed TB and HIV cases were covered by TB and HIV counseling.

Indicator 24 records the number of individuals provided with technical assistance for HIV-related capacity-building (PEPFAR indicator).

The capacity of 797 individuals was built through 18 seminars for 769 specialists and one training session for 28 specialists, far exceeding the project's target. The decision to provide more capacity building on TB-HIV issues so as to improve quality of services was based on the project's baseline needs assessment (Annex B), which revealed that the majority of TB and HIV specialists have little awareness of evidence-based approaches to dual infection management. Besides, the recently published management of TB/HIV co-infection clinical protocol for the WHO European region has contributed to innovations that local HIV specialists are not familiar with.

In addition, opportunities such as the GTBI-led gap analysis and the 17 mentoring visits to the AIDS centers conducted by the project were used to provide further on-the-job capacity building.

Indicator 25 records the number of individuals provided with technical assistance for HIV-related policy development (PEPFAR indicator). To date, the project has provided this type of technical assistance to 148 decision-makers through 12 roundtable meetings. Baseline survey results led the team to undertake additional work in this area.

Indicator 26 records the proportion of TB patients who are counseled and tested for HIV at USAID assisted sites. See the explanation of Indicator 22.

Indicator 28 records the percentage of HIV-positive patients who were screened for TB in HIV care or treatment settings (PEPFAR C2.4.D14). During the reporting period, this indicator slightly exceeded the target, reaching 81.6 percent.

The project developed a TB/HIV referral monitoring database for AIDS centers and raion-level HIV offices in the project regions, as well as instructions for its use. Monitoring of TB/HIV services and referrals using the new database began in May 2013. Since that time, in all 10 USAID-supported regions, screening data on nearly 8,013 PLWH have been incorporated into the database (see Exhibit A-16, A-17).

Since the database was implemented only recently, data disaggregation according to PEPFAR requirements is available for only a four-month period. Therefore, for Year 1, data has been reported based on routine data collection by the UCDC.

Exhibit A-15. Results of PLWH screening (May, 2013-September 2013)

Region	Gender	Age		Screening interview	Chest X-ray		Sputum smear test		GeneXpert Test		TB specialist conclusion	
		Younger than 18	Older than 18		Abnormalities detected	Abnormalities not detected	AFB+	AFB-	MBT+	MBT-	Confirmed	Ruled out
Donetsk oblast	Female	0	219	219	21	183	0	17	0	0	2	17
	Male	0	175	176	29	140	0	18	0	1	4	21
Dnipropetrovsk oblast	Female	0	1,781	1,770	233	1,385	33	631	11	123	82	651
	Male	0	1,527	1,515	389	995	64	597	20	152	157	460
Luhansk oblast	Female	17	443	443	48	231	4	141	0	133	7	155
	Male	23	391	416	60	207	10	145	4	133	17	124
Odessa oblast	Female	69	335	411	66	307	11	346	6	151	30	278
	Male	51	302	363	94	234	24	292	10	141	44	108
Kharkiv oblast	Female	0	82	82	14	47	1	16	3	12	5	54
	Male	0	63	63	10	44	2	14	3	12	6	36
Kherson oblast	Female	0	88	86	11	55	1	9	0	4	4	27
	Male	0	90	89	8	53	1	6	0	4	6	28
Zaporizhzhia oblast	Female	16	433	449	3	142	0	32	0	4	2	399
	Male	12	448	461	13	166	2	41	4	19	16	737
AR Crimea	Female	0	217	217	6	99	1	12	0	0	1	60
	Male	0	145	145	2	64	1	13	0	0	1	34
Kyiv city	Female	0	357	357	7	14	7	14	0	0	2	0
	Male	0	399	399	28	17	8	50	0	0	5	6
Sevastopol city	Female	0	144	144	2	105	1	109	0	1	1	5
	Male	0	186	186	17	125	5	128	0	2	7	5
USAID-supported regions	Female	102	4,099	4,178	411	2,568	59	1,327	20	428	136	1,646
	Male	86	3,726	3,813	650	2,045	117	1,304	41	464	263	1,559
TOTALS		188	7,825	7,991	1,061	4,613	176	2,631	61	892	399	3,205

Exhibit A-16. Results of PLWH Screening (May, 2013-September 2013)

Sex	Age		Screening (Individuals)	Coverage (Percent)
	Younger than 18	Older than 18		
Female	102	4,099	3,499	85.4
Male	86	3,726	3,132	84.1
Total	188	7,825	6,631	84.7

Indicator 29 records the number of HIV-positive adults and children receiving a minimum of one clinical service (PEPFAR C 2.1.D). The number of people living with HIV who were registered and under medical supervision (i.e., receiving medical services on a regular basis) was recorded at 76,979, or 115 percent of the target of 67,000.

There was no opportunity to provide the required combined disaggregation, as neither the registration nor the reporting M&E system stipulates this data collection profile. The project developed database tool to enable collection of disaggregated data for this indicator, but a full year of data are not yet available. See comment on Indicator 28.

Indicator 30 records the number of eligible adults and children provided with a minimum of one care service (PEPFAR C 1.1.D). The total was 77,079, exceeding the target by 15 percent.

This indicator covers both HIV-infected people under medical observation who received a minimum one service at specialized health care facilities (AIDS centers) and 100 clients of the PLWH network, representing key populations (injecting drug users, female sex workers, and homeless people) who were counseled on TB and HIV issues by project consultants.



USAID | **UKRAINE**
FROM THE AMERICAN PEOPLE

STRENGTHENING TUBERCULOSIS CONTROL IN UKRAINE PROJECT

STRENGTHENING TUBERCULOSIS CONTROL IN UKRAINE

**FINDINGS FROM THE QUALITATIVE BASELINE ASSESSMENT OF LOCAL TB
CONTROL MEASURES**

JULY – AUGUST 2012

**SUBMITTED TO ALINA YUROVA,
CONTRACTING OFFICER'S REPRESENTATIVE
October 20, 2013**

This publication was produced for review by the United States Agency for International Development and prepared by Chemonics International in partnership with Project HOPE.

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

- ACRONYMS.....54
- EXECUTIVE SUMMARY.....55
- INTRODUCTION56
- METHODOLOGY57
- PROJECT BACKGROUND57
- FINDINGS.....58
 - TB Detection 58
 - Patient Follow-up in Outpatient PHC Settings 60
 - DOT Management of Drug-susceptible TB 61
 - Risk of Acquiring and Management of MDR-TB..... 63
 - Quality and Reliability of Medical Records..... 64
 - Laboratory Diagnostics 65
 - Level 1 laboratories65
 - Level 2 laboratories68
 - Level 3 laboratories69
 - Summary of findings regarding laboratory diagnostics70
 - Infection Control (IC)..... 70
 - Organizational and administrative IC measures70
 - Environmental control72
 - Personal protective equipment.....73
 - Summary of findings relating to IC73
 - TB/HIV Co-infection Services..... 73
 - Summary of Findings related to TB/HIV Co-infection Services75
- CONCLUSION.....76

ACRONYMS

AFB	Acid-fast bacillus
AIDS	Acquired immune deficiency syndrome
AR	Autonomous Republic
ART	Anti-retroviral therapy
BSC	Biosafety cabinets
CMC	Central Medical Council
CT	Computer tomography
DOT	Directly observed treatment
DOTS	Directly observed treatment, short course
DST	Drug susceptibility testing
EQA	External quality assurance
HCW	Health care worker
HIV	Human immunodeficiency virus
IC	Infection control
M&E	Monitoring and evaluation
MDR-TB	Multidrug-resistant tuberculosis
MRI	Magnetic resonance imaging
MTB	Mycobacterium tuberculosis
NGO	Non-governmental organization
OST	Opiate substitution treatment
PHC	Primary health care
PLWH	People living with HIV
PMDT	Programmatic management of drug-resistant tuberculosis
STbCU	The Strengthening Tuberculosis Control in Ukraine project
TB	Tuberculosis
USAID	United States Agency for International Development
UVGI	Ultra-violet germicidal irradiation
VTC	Voluntary testing and counseling
WHO	World Health Organization
XDR-TB	Extensively drug-resistant tuberculosis

EXECUTIVE SUMMARY

Ukraine's tuberculosis (TB) control system has undergone noteworthy improvements in the last decade. This is due, in large part, to successful cooperation with international donors, such as USAID, the Global Fund to fight AIDS, Tuberculosis, and Malaria, and the Royal Netherlands Chemical Society (KNCV) Tuberculosis Foundation. One major accomplishment is the recent revision of national standards of TB control in Ukraine, which are now more closely aligned with World Health Organization (WHO)-endorsed international standards. As a result, the safety and effectiveness of numerous routine health care procedures in Ukraine have significantly improved. This is especially true concerning TB case detection, TB treatment, and the management of TB/HIV.

Despite these encouraging achievements, a number of systemic failures and weaknesses were detected in Ukraine's TB control program during a qualitative assessment of this system, which was conducted by the USAID Strengthening Tuberculosis Control in Ukraine (STbCU) project in July and August 2012. Most of the problems identified were caused by discrepancies between the knowledge and practices of health care professionals (clinicians and laboratory specialists) and those of health care administrators. Requirements imposed by local administrations, such as redundant fluoroscopy protocols or the use of the TB incidence rate as the primary indicator of the Oblast State Administration director's job performance, are often confusing and counterproductive. In combination with the limited financial, material, and human resources available in Ukraine's health care system, these local policies are capable of derailing the advancements that have already been made and preventing future advancements in medical services, which are necessary for decreasing the national TB burden in Ukraine.

The findings of the STbCU project's assessment, presented here, will inform the content of STbCU's future training and advocacy campaigns, guide the Project's efforts to improve health care practices nation-wide and, ultimately, help lower the incidence of TB infection in Ukraine.

INTRODUCTION

The primary goal of the WHO “Stop TB Strategy” is to achieve the Millennium Development Goal of reducing the global TB burden by 2015. In 2005, the WHO set the following objectives for achieving this goal: (1) diagnosing 70% of all people with infectious TB and (2) curing 85% of diagnosed TB cases. Currently, several challenges prevent the achievement of this goal in Ukraine, include rising incidence and mortality rates (see Figure 1), the severe vulnerability of at-risk populations, and the persistent under-diagnosis of TB.

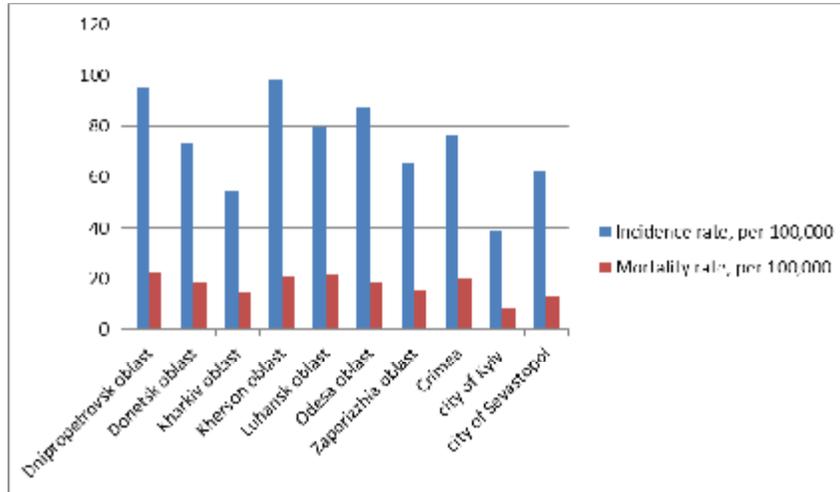


Figure 1. TB incidence and mortality, by oblast.

The incidence rate of TB in Ukraine reached epidemic levels in 1995. By 2011, that incidence rate had risen to 67.2 cases per 100,000 persons. Moreover, the rate of successful TB treatment in 2011 was discouragingly low: 56.6% for new smear-positive cases and 40.1% for recurrent smear-positive cases (see Figure 2). The numbers of multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB) cases are also rising rapidly. Due to poor and inconsistent monitoring of the disease, the current incidence of drug-resistant TB in Ukraine is unknown.

TB notification rates also vary across oblasts. Differences in rates of notification are caused by the uneven

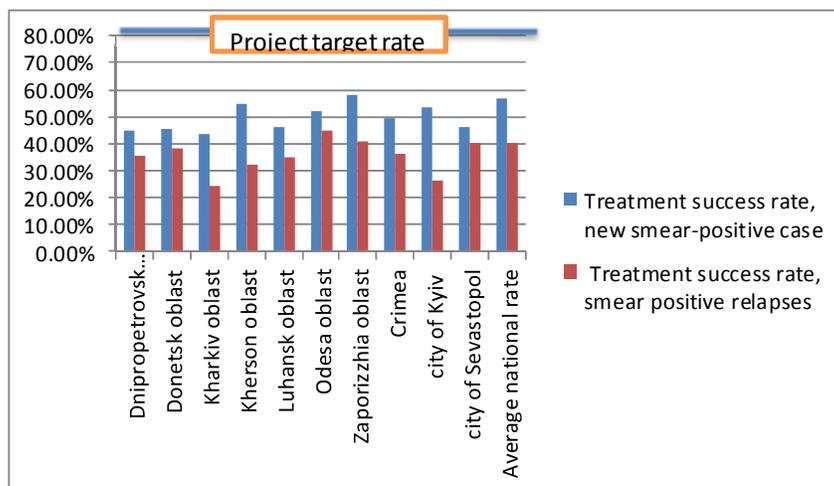


Figure 2. Rate of treatment success among new and relapsed smear-positive TB cases in 2011

distribution of individual or behavioral risk factors (i.e. rates of alcohol and drug abuse, HIV infection, homelessness, and criminal activity) throughout different populations in Ukraine. In spite of this poor evidence base, high mortality rates and consistently poor treatment outcomes allow us to infer that government reports indicating unusually low TB incidence of TB are the product of systematic under-diagnosis and delayed diagnosis, not evidence of successful TB interventions in Ukraine. The fact that, currently, only 1.16% of smear tests performed at the primary health care (PHC) level test positive for TB, merely adds evidence to the conclusion that many real TB cases are going unrecognized.

METHODOLOGY

In the months of July- August, 2012, the Project assessed the state of the National Tuberculosis Program in 10 USAID-supported regions: Donetsk oblast, Kharkiv oblast, Dnipropetrovsk oblast, Zaporizhzhia oblast, Kherson oblast, Odesa oblast, Luhansk oblast, the Autonomous Republic (AR) of Crimea, and the cities of Kyiv and Sevastopol. In order to better inform the planning and implementation of the Project's activities, monitoring visits were conducted by Project staff to a number of health care facilities in these regions, as recommended by regional administrations. Selected sites included TB dispensaries and hospitals, local and regional AIDS Centers, local polyclinics, central raion hospitals, family doctors' offices in urban and rural areas, and regional boards of the Ukrainian Red Cross Society. Through the course of this assessment, a total of 20 PHC facilities, 23 TB units and 10 AIDS-Centers were visited.



At each site, Project staff assessed multiple clinic functions, including the organization of TB, MDR-TB, and TB/HIV diagnostic services; outpatient and hospital care provided to TB, MDR-TB, and TB/HIV patients; psychological and social support services; infection control (IC) measures; and the adoption of the E-TB Manager system.

This assessment utilized a variety of qualitative data collection methods including tours of health facilities and direct observation of staff performance, expert assessments of medical records, interviews with health care staff and patients, and a systematic analysis of previously conducted site assessments.

PROJECT BACKGROUND

The primary aim of USAID's five-year STbCU project is to decrease the TB burden in Ukraine. In meeting this goal, the Project places special emphasis on the management and reduction of MDR-TB, XDR-TB, and TB/HIV co-infection. The Project aims to achieve these goals by strengthening TB-related diagnostics, case management, and prevention

capabilities in Ukraine on two levels. First, it will assist national and regional facilities in planning, implementing, and monitoring WHO-endorsed standards of care. Second, it will assist in the implementation of best practices in TB control at the PHC level.

In line with these broader goals, the Project maintains the following 4 program objectives:

1. **Improve the quality and accessibility of directly observed treatment, short course, (DOTS)-based diagnostic, treatment and prevention services, as recommended by the WHO:** These activities include the implementation and improvement of DOTS-based TB treatment programs, the expansion of access to improved TB prevention, diagnostics, and treatment services, and operational research and awareness campaigns in order to improve the overall performance of the national TB control program.
2. **Create a safer medical environment for patients and health care staff:** These activities include improving IC and strengthening the capacity of the regional Sanitary and Epidemiological Services in implementing, monitoring and evaluating IC practices and technologies.
3. **Build the capacity to implement Programmatic Management of Drug-resistant Tuberculosis (PMDT) programs for MDR-TB and XDR-TB control:** These activities include training health care staff and improving the supervision and monitoring of MDR-TB and XDR-TB case diagnostics, according to WHO guidelines.
4. **Improve access to TB/HIV co-infection diagnostic and treatment services:** These activities include the identification of existing gaps in TB/HIV co-infection management and the establishment of the key institutional capacities necessary for overcoming these barriers, supporting HIV testing efforts for TB patients, and working to effectively prevent and ensure early diagnosis of TB in HIV patients.

FINDINGS

TB Detection

This needs assessment identified a number of strengths in Ukraine's current TB detection capabilities. For instance, most Ukrainian health care facilities have established sputum collection points where Ziehl-Neelsen staining is available. In the majority of USAID-supported regions, triple smear testing is performed, and more than two tests are conducted per patient, on average. In all USAID-supported regions, patients with an acid-fast bacillus (AFB)-positive smear tests are usually referred to a TB specialist within three days of their test results. In Donetsk oblast, TB facilities use their own vehicles to transport smear-positive patients to the TB specialist within the three days following a positive smear test. According to unconfirmed verbal reports from PHC staff, adequate contact is maintained between the patient and the specialist following this initial referral.



Despite these stringent referral processes, WHO-recommended procedures for TB detection are not well implemented at the PHC level. TB specialists are, in general, aware of DOTS-based protocols for TB detection and diagnosis; however, the diagnostic procedures currently in use are often redundant, and alternative

diagnostic methods frequently take precedent over DOTS-based standards of care. A primary example is the continued use of x-ray imaging as a diagnostic tool in PHC clinics. In some instances, patients with clinical symptoms of TB, including persistent cough lasting more than two weeks, are referred to both chest x-ray and smear microscopy services for simultaneous screening. General practitioners and family doctors are often not aware of early signs of TB and frequently fail to refer patients for further consultation when it is warranted. Instead, it is usually the x-ray specialist, not the general practitioner, who determines whether a patient should be referred to TB services. This is illustrated by the comments of a health care worker in Kherson, who claimed that the decision to refer a patient to TB services "...is up to the x-ray specialist to decide."

In Kherson oblast, the TB specialist is obliged to examine all pneumonia patients with suspected TB before antibiotic therapy can begin. Many cases of suspected TB that are sent to a TB specialist for examination are patients with TB-like symptoms but who do not satisfy the minimum diagnostics standards for TB referral. Rather than following WHO-standard protocols for patient identification, general practitioners often refer patients who have had a cough for just a few days. This practice efficiently transfers all responsibility for potential misdiagnoses away from the PHC physician to the TB specialist. In Dnipropetrovsk oblast, Luhansk oblast, Kharkiv oblast, Zaporizhzhia oblast, Odesa oblast, and AR Crimea, physicians follow a similar procedure, referring all patients with abnormal chest X-rays to a TB specialist for differential diagnosis prior to conducting sputum microscopy to test for AFB. In Donetsk oblast, many patients receive treatment for TB despite having never received a differential diagnosis at all.

A number of barriers, both financial and administrative, hinder the adoption of standardized diagnostic procedures in Ukraine. Due to a shortage of funds, additional diagnostic techniques like computer tomography (CT), magnetic resonance imaging (MRI) and histological tests are underused or unavailable in most regions; this is especially true among patients with suspected HIV/TB co-infection. In Kherson oblast and AR Crimea, sputum smear microscopy is only performed by PHC staff after a patient has been consulted by a TB specialist, which can pose procedural complications and delays.

In Kharkiv oblast, Kherson oblast, Odesa oblast, and Zaporizhzhia oblast, regional health administrations require that a minimum number of patients be referred for triple smear microscopy on an annual basis. Striving to fulfill these requirements, doctors often ignore standardized selection criteria for smear microscopy and refer patients for this screening procedure though the test is not indicated. This has even been known to occur with patients whose TB diagnosis has already been confirmed. The appearance of abnormalities on chest x-rays is frequently used to justify these unnecessary referrals to sputum microscopy. This all results in a systematic over-reporting of TB diagnosis via smear microscopy. For this reason,

statistics generated from smear microscopy tests do not reflect the real state of TB detection at the PHC level.

Finally, there are a number of unrelated inconsistencies across regions that hinder the uniform adoption of DOTS-based diagnostic protocols. For example, there is disagreement among doctors about the primary clinical symptoms of TB. Some physicians pay more attention to fatigue and sweating than to more significant clinical symptoms such as persistent cough. These inconsistencies interrupt triage procedures designed to identify the most contagious patients. In another example, the outpatient files of the acting pulmonologist at one of the facilities visited in AR Crimea did not even contain referral slips for sputum microscopy.

While progress has been made over the past decade in the implementation of WHO-recommended procedures for case detection, non-standard approaches to diagnosis, triage, and follow-up continue to be widely used. The redundant and inconsistent use of both conventional and WHO-recommended approaches has led to inaccuracies in available epidemiological data and has seriously affected the rate of TB notification.

Patient Follow-up in Outpatient PHC Settings

In most regions, special rooms are designated in PHC facilities for the specific purpose of providing DOTS services to patients with drug-susceptible TB. The best practices of this kind were found in AR Crimea, Donetsk oblast, and Dnipropetrovsk oblast. In these regions, patients are also provided with social support services including food allowances and, for patients with HIV, organized meetings for peer-to-peer support as well.

In those regions where narcological (addiction treatment) facilities offer opiate substitution treatment (OST)—Donetsk oblast, Kherson oblast, and AR Crimea—TB and HIV treatment programs have been integrated with OST services, and all three therapies are available under directly observed treatment (DOT) protocols in the same location. Activities are underway to improve outreach services in these three regions as well. In AR Crimea, for instance, a mobile health care point has been established in rural areas to examine and treat patients, many of whom are not officially registered. Such patients often consist of migrants, seasonal workers, or the homeless. Many live in a remote area in AR Crimea called “Collective Gardens.”

This assessment also identified significant differences in the locations of and levels of access to DOT facilities. In some oblasts, there are no DOT sites in PHC settings at all. Local administration officials offer a number of explanations for this, including the absence of any regulatory mechanism for transferring TB medications from the TB dispensary to a local PHC clinic, which is considered by Ukrainian regulations to be an unlicensed “third party.” Local NGOs echo this complaint. In oblasts where TB treatment is strictly limited to TB dispensaries, patients living within the catchment area served by the dispensary must commute to that dispensary in order to receive DOT-based treatment; for some patients, this can be a considerable distance.

In regions where DOT rooms have been established in PHC facilities, the degree of direct observation of outpatient treatment varies. For example, there are DOT sites that provide patients with their daily dose of antibacterial medications on-site each week day under the observation of the nurse, but then dispense to patients enough medication to continue their treatment at home over the weekend when they leave the DOT site each Friday. Such programs are able to ensure direct observation for the majority of each patient’s treatment course. There are also designated DOT sites where no direct observation of treatment is conducted at all. These sites simply provide patients with enough medication to last a period

of seven to ten days, allowing patients to administer and monitor their own treatment at home. Such practices were observed, for example, in Odesa oblast. It is also apparent that some DOT sites, when experiencing shortages or stock-outs of necessary medications, are not taking any proactive steps to receive new supplies from the TB service or to inform the TB service about treatment defaults arising from drug shortages.

Inconsistencies were also found in recording practices and supplemental services in DOT facilities. Several gaps in the use and completion of TB 01 Treatment Cards (the individual TB case management form) were identified at DOT sites. Instances were observed in which forms were completed in advance, forms were not completed on the day of the visit, or data was missing from the forms entirely. Project staff also observed that the distribution of food assistance did not correlate with patients' adherence to supervised drug consumption. The food allowances program was originally designed as an incentive program; thus, the lack of attention to patients' treatment adherence when allocating these allowances dramatically undermines the potential motivation to adhere that the program provides. General inconsistencies in services were also found, such as variation in the extent and availability of psychological support for TB patients across health care settings. Additionally, PHC facilities have no ability to treat MDR-TB patients, and some TB specialists are not aware of the option to cooperate with Ukraine's Red Cross Society.

It has become clear that DOT is not a routine practice in most PHC settings, and this assessment of existing TB service at both medical and non-medical institutions reveals poor cooperation in providing outpatient treatment follow-up and support. Unfortunately, medical professionals are not optimistic about the future of these services. Administrative staff at local health care facilities are concerned that new health care reforms may lead to the closure infectious disease outpatient departments and DOT sites established at PHC facilities.

DOT Management of Drug-susceptible TB

In the majority of the settings visited, inpatient DOT treatment is initiated in a timely manner following hospitalization. Inpatient DOT services are managed by the Central Medical Council (CMC). In all regions, drug susceptibility testing (DST) is performed for smear-positive patients, but only a few regions have started using the E-TB Manager (a web-based electronic database that facilitates the collection of data on TB detection and care in line with WHO standards and indicators) for registering TB patients, drug prescriptions, and side effects. Site visits also revealed that remote consultations, such as a consult between TB specialists and patients via Skype or some other remote communication technology, have been established in Donetsk oblast.

Case registration, case management, and record keeping practices for monitoring the treatment outcomes of drug-susceptible TB patients frequently violate both WHO standards and Ukrainian regulations for statistical monitoring. Certain systematic errors were identified, which are likely creating significant distortions in the epidemiological data. For example, a number of TB patients are classified as "other" in the TB case taxonomy (available classifications include "new," "recurrent," "treatment failure," etc.). Being designated "other" could mean that there is something terribly unique about the patient, but more likely it means that proper medical paperwork was not transferred with the patient from the previous facility providing care. These "other" TB cases are not included in the calculation of TB morbidity; however, these cases *are* included in nation-wide cohort analyses assessing treatment outcomes and the success of TB care. These inconsistencies in record keeping and monitoring can easily produce an artificially low estimate of the morbidity rate.

During interviews with the staff of different clinical sites, respondents identified additional mechanisms by which estimates of the morbidity rate may be artificially reduced in their region. A patient could be lost to surveillance if one or more of the following occurs:

- The patient moves outside of the region and is lost to monitoring and follow up.
- The patient has a prior history of TB infection, but has moved to a region without a TB 09 form (form documenting patient referral to a new facility).
- The patient is a former prisoner.
- The patient is homeless or has no registration in the catchment area.

It is clear that approved standards for monitoring treatment are not followed, resulting in the unnecessary prolongation of both the intensive and continued treatment phases. Additionally, examinations are not always completed due to limited facilities and TB specialists' poor knowledge of (or adherence to) approved testing protocols.

Several factors were identified that hinder timely referral to TB services. In Kharkiv oblast, several instances were noted in which treatment began as late as 10 to 14 days after the diagnosis was confirmed. Cases are typically managed according to the recommendations of the CMC, but at times case management progresses without a full consideration of DST results and other case management standards. With the exception of Donetsk oblast, there is only one CMC per oblast. The CMC in most regions only meets once per month to review cases of drug-susceptible TB in their specific territory. This causes delays in the approval of prescribed treatment regimens.

Previously, Category 1 patients could be administered either the four-component or the five-component treatment regimen. Protocols clearly identify the indications for different treatment regimens; however, TB specialists in most regions appeared to be predominantly guided by a rule of thumb: "the more, the better." This frequently led to inappropriate administration of the five-component treatment regimen. As a result, a patient whose treatment outcome is determined to be "failure," and is thus transferred to Category 2, immediately received second line drugs when, according to clinical protocols, five first line drugs should be used. The legislation governing this particular protocol has recently been changed, however, and, at the time of writing, only the four-component regimen is approved for Category 1 patients.

Other violations of treatment protocol were also identified. In Zaporizhzhia oblast, some patients with first line drug-susceptible TB are receiving second line drugs, particularly fluoroquinolones. Physicians justified this practice by attesting to the severity of the patients' condition, poor responses to other treatments, incorrect DST results, and the belief that fluoroquinolones are a more effective medication. Additionally, the duration of treatment in both the intensive and continuation phases is frequently prolonged without proper justification, as many Central medical councils support the belief that smear and culture conversion should not be considered a principal indicator of treatment efficacy. Rather, they consider the presence of cavities on the chest x-ray, concomitant diseases, and patients' social status to be more informative indicators of their condition. There are also cases of patient hospitalization in the continuation phase of treatment due either to outpatient DOT being unavailable near the patient's residence or due to concerns over the patient's social status.

A mechanism has not yet been established in any region for transferring patient records from the hospital to the TB specialist after the patient is discharged from inpatient care. This results

in delays of up to a month in the transfer of TB Treatment Cards (TB 01, TB 09). Instead of being sent directly to the location of outpatient TB care, the discharge documents are generally given directly to the patient or are sent to the statistics department, where the cards accumulate until they are collected by personnel from local medical facilities.

Cases of treatment outcome misclassification were also observed. For example, in AR Crimea and Odesa oblast, TB cases are not re-registered following a diagnosis of MDR-TB; instead, the same TB Treatment Card (TB 01) is used. Patients who experience treatment failure are sometimes immediately labeled as “chronic” and transferred into palliative care. This transfer is usually justified by claims that second line drugs are in short supply or that or that the patient’s adherence to treatment was unacceptably low. In TB facility staffing plans, there are positions available for patronage nurses which are not filled. This staff shortage often results in the failure to conduct patient follow-up, despite the allowance of personnel to perform these duties in the original staffing plan. In addition, the age-old strategy of preventative treatment (or so-called “seasonal treatment,” which consists of bi-annual courses of isoniazid over a period of 90 days) is still practiced in the AR Crimea and Odesa oblast.

Despite some progress in the timely onset of treatment and the use of DST, many gaps in care, mostly related to poor patient follow-up, have been identified. These inconsistencies in DOT coverage are usually the result of low adherence to continuous DOT on the part of patients and medical personnel, as well as inadequate resources for necessary staffing, outreach, and social support.

Risk of Acquiring and Management of MDR-TB

Managerial personnel at regional TB hospitals are making efforts to accelerate the transfer of MDR-TB patients to specialized units after the confirmation of drug-resistant infection. In Luhansk oblast, this transfer is often completed as quickly as the same day that DST results are received. In this oblast, these transfers are handled among staff during regular meetings with the chief physician.

In all regions, MDR-TB diagnoses are verified and second line drug treatment regimens are prescribed and modified by the CMC alone. In contrast, MDR-TB diagnoses in Zaporizhzhia oblast are postponed until a second DST is conducted, which causes delays in the administration of treatment and patient transfer to appropriate, specialized facilities. In Kherson Oblast TB dispensary, MDR-TB patients are never fully isolated from other patients. Instead, they are placed in the same space as chronic patients in palliative care. Furthermore, CMCs do not always consider DST results and case management standards in their detection of MDR-TB cases.

In all the regions except Odesa oblast and Donetsk oblast, MDR-TB treatment regimens are tailored without any consideration for the expected availability of second line drugs during the duration of treatment. This results in frequent substitutions when prescribed drugs become unavailable. These substitutions are often made without regard for the patient’s drug susceptibility profile. Additionally, Project staff observed that patients with new cases of MDR-TB are sometimes switched to first line drug regimens due to the unavailability of the second line drugs to which they have been deemed susceptible. This pattern was observed in Donetsk oblast, Dnipropetrovsk oblast, Odesa oblast, Luhansk oblast, and AR Crimea.

The same, previously identified gaps in the management drug-susceptible TB, including inappropriately long durations of treatment, improper monitoring and record keeping, and the absence of DOT, were also observed in the management of MDR-TB. In Odesa oblast, the

interruption of treatment for detoxification purposes (in response to toxic hepatitis, for example) is vastly over-practiced, resulting in unreasonable suspensions of treatment. In all regions, there are facilities where adverse effect monitoring cards are not maintained; on some the forms used for TB care, a space for noting adverse effects are not even available. As mentioned above, patients receiving palliative care are hospitalized in most regions in the same facility with MDR-TB patients. Isolated palliative care departments only exist in Luhansk oblast and the city of Sevastopol. Moreover, MDR-TB patients do not receive psychological support in health care facilities in any regions except Zaporizhzhia oblast, Odesa oblast, and AR Crimea. This needs assessment also revealed that MDR-TB patients do not receive social support in the outpatient treatment phase except in Donetsk oblast, and MDR-TB outpatient treatment is only provided at PHC facilities in AR Crimea. Finally, poor social and psychological support and improper management of adverse reactions were observed in most of the regions visited during this assessment. These factors significantly affect patients' treatment adherence. This may be contributing to Ukraine's national MDR-TB treatment success rate, which remains low at 42.3%.

Thus, there are a number of problems in the management of MDR-TB in Ukraine, which, in combination with an irregular supply of second line drugs, contribute to the low rate of observed treatment success.

Quality and Reliability of Medical Records

Today, Ukraine has three TB monitoring and assessment systems. Although these systems are patient-oriented, they are neither coordinated nor synergistic. Ukraine's AIDS Service facilities use their own system of TB case registration for people living with HIV (PLWH), while the Sanitary and Epidemiological Service has a separate TB registration system. The development of a standardized register of TB cases, the E-TB Manager, has been ongoing for the last 10 years, thanks to support from USAID projects and from the Global Fund to Fight AIDS, Tuberculosis and Malaria. Due to understaffing, lack of necessary equipment, and lack



of internet access at raion level facilities, however, the system still is not being properly used.

Often, the details of registered cases, as recorded by different services, do not match up, creating discord in national TB data. Further, some data monitoring requirements are redundant, such as regulations on the collection of pharmacovigilance data, (mandated in Order of the Ministry of Health No. 1005,

dated December 29, 2011, "On endorsing the Order of monitoring adverse effects of medications allowed for medical use,") and the mandate describing the use of the "adverse effects card" during patient TB care (found in Order of the Ministry of Health No. 109, dated March 31, 2009, "On endorsing temporary forms of registering and reporting cases of drug-resistant TB").

Due to these many regulations, doctors have to spend much of their time filling out multiple and redundant registration forms, which are sometimes unfamiliar and difficult to

comprehend. This leads to frustration and fosters an unwillingness to complete necessary reporting. Project staff identified incomplete and incorrectly completed TB Treatment Cards (TB 01) in eight of the regions observed. Recorded protocol violations included non-compliance with reporting instructions, drug intake being registered after a delay or up to five days ahead of schedule, unjustified extensions of the intensive phase of treatment, and a lack of notes on treatment monitoring.

In four regions (AR Crimea, Zaporizhzhia oblast, Kharkiv oblast, and the city of Kyiv), this needs assessment revealed cases in which the information on TB 03 forms (used for the raion level TB registry) did not match the information on TB 01 forms. Mistakes in the completion of forms TB 05 (referral and results for laboratory diagnosis by smear microscopy) and TB 06 (referral and results of laboratory diagnosis by culture and DST) were also found in most of the sites visited. Furthermore, health care staff does not understand the necessity of collecting this kind of data when it is requested from government entities. When data is not logged electronically, personnel from state medical services are forced to collect information from hard copies of patient records. This creates unreasonable complications and delays in the collection of basic medical data across regions. These systematic and pervasive difficulties with data collection at the national level will likely affect Project efforts to collect data for its purposes, as well.

These problems are exacerbated by the fact that medical statistics departments in all regions lack adequate staffing for statistical reporting and analysis. This situation is the result of outdated legislation on department staffing, which does not provide for current reporting and analysis needs, including but not limited to the use and maintenance of the E-TB Manager system.

The E-TB Manager is used locally in all observed regions; however, its use is not routine, as most regions lack the necessary human and financial resources to do so. In the oblasts currently using E-TB Manager, only a portion of raion specialists have been properly trained in its use.

Therefore, all regions require technical support to improve the skills of their staff in completing TB registration forms. There is also a prevailing need for mentoring support in order to scale up the use of E-TB Manager and for strengthening the analytical capacity to monitor all aspects of the national TB program, problems of TB/HIV co-infection, and the general epidemiological situation in Ukraine.

Laboratory Diagnostics

Level 1 laboratories



TB diagnostics in Level 1 laboratories were observed to be well organized. Laboratory staff utilize WHO-endorsed standard techniques for biological material work-up, smear preparation, Ziehl-Neelsen staining, smear microscopy,

and the interpretation of results. In the majority of Level 1 laboratories, specialists have been trained in microscopy and are adequately experienced in the use of this technology. They also presented to Project staff as committed to TB detection efforts, recognizing the significance of their work. Laboratory staff expressed satisfaction with the knowledge and skills they have received from trainings organized by the USAID Ukraine Tuberculosis Control Partnership project, implemented by Partners for Appropriate Technologies in Health; however, due to the high turnover of laboratory personnel, there is a great need for additional microscopy trainings, as many health professionals have received neither supplemental support nor continuing education on these methods in more than three years.

Unfortunately, the proportion of poor (i.e. uninformative) sputum samples remains high: up to 30-35% in some laboratories. This is likely an indicator of problems in the pre-laboratory stages of the screening process, such as poor patient selection and poor sputum collection techniques (including improper or incomplete instructions given to patients who provide sputum samples for testing).

A review of many laboratories' sputum sample registration logs revealed a dramatic increase in the number of diagnostic tests performed in winter months. Project staff suspects that this pattern is the result of inappropriate patient selection, motivated by clinics' need to meet administrative requirements on the number of smear tests performed annually. In an attempt to conduct the minimum number of mandated sputum tests, clinics often refer patients to this diagnostic procedure when they present with respiratory symptoms that do not necessarily indicate TB screening, such as a cough that has lasted only a few days. Thus, higher rates of inappropriate sputum testing can be reasonably expected during periods of higher incidence of respiratory disease (such as the winter season).

In almost all of the facilities visited, sputum samples are collected in secure plastic containers with screw caps. The medical staff responsible for sample collection transports them to the laboratory in special containers.

According to the TB 04/1 log (the TB laboratory register for smear microscopy), the work load in a number of laboratories meets WHO standards, averaging 18 smears per day or 70 smears per week. The average number of smears per patient is 2.2; however, because of inappropriate location and ineffective triage procedures, the throughput of some laboratories does not meet the WHO standard of 4 to 20 cases per person per day.

The rate of TB detection by microscopy (see Figure 3) ranges from a low of 1.36% in Kharkiv oblast to a high of 4.21% in Donetsk oblast. In the majority of regions assessed, the WHO-recommended indicator for detection by

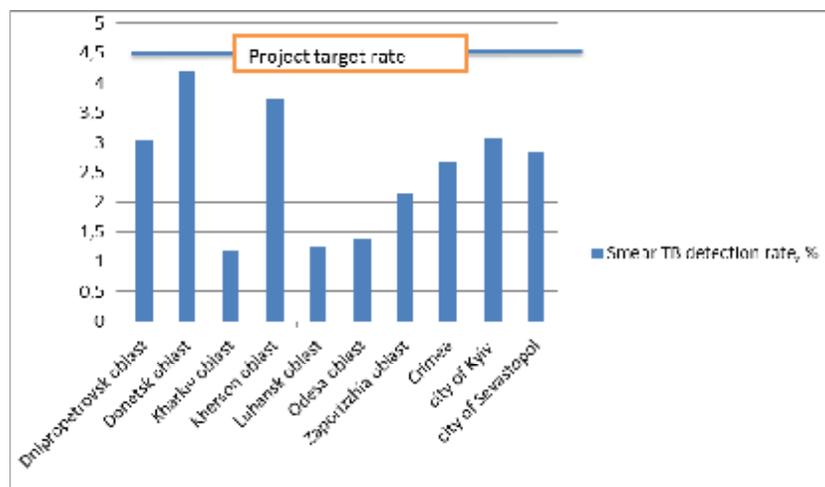


Figure 3. Rate of TB detection by sputum smear microscopy in each oblast.

microscopy is not met. In all Level 1 laboratories, admission, registration, smear preparation, and staining of sputum samples are conducted in different zones. Handouts describing endorsed smear preparation, staining techniques, and test result interpretation are available in the workplace. Standard registration and reporting forms are completed in the lab, and test results are delivered on time. Internal quality assurance of microscopy methods is well maintained.

The majority of laboratories possess an adequate supply of disposable slides and other single-use materials, but supplies remain insufficient in several locations. Laboratories have sufficient supplies of unstained mycobacterium tuberculosis positive (MTB+) and MTB-smears, and the results of internal quality assurance measures are properly recorded and filed. All of the laboratories observed are equipped with binocular microscopes and mobile tables. Smears are prepared in safe conditions in ventilated cabinets; however, a number of laboratories use ventilation cabinets with low inward flow rates or with no regular maintenance or testing conducted by the technical and laboratory staff. In some laboratories, the staff works in ventilation cabinets which are out of order or which are placed directly onto their work benches.

When working with contaminated material, the staff wears personal protective equipment such as aprons, gloves, and goggles. Many laboratories also have FFP2 particulate respirators, but these respirators are not in adequate supply, and staff has not received training in the appropriate use, storage, or disposal of these respirators. In one laboratory visited by the assessment team, all personnel wore respirators while the assessment team was on site even though no work with contaminated material was being performed at that time.

Interviews with laboratory staff showed that all personnel (including administration and laboratory staff) are aware of the significance of IC mechanisms in order to reduce the rates of occupational TB infection; however, their level of knowledge on laboratory biosafety appears to be inadequate. For example, the laboratory personnel interviewed by Project staff did not show any familiarity with the emergency procedures required in a biohazard incident.

External quality assurance (EQA) of smear microscopy in Level 1 laboratories is performed by higher-level laboratories. In many oblasts, a well-established EQA system is in place, in accordance with WHO recommendations. Three EQA approaches are maintained: on-site evaluation, panel testing, and blind rechecking. Despite this, significant gaps in the EQA system were revealed in a few oblasts. In Zaporizhzhia oblast, Luhansk oblast, and AR Crimea, administration of EQA appears to be sporadic, and panel testing has been replaced by irregular, selective rechecking of positive smears by the staff of Level 2 and Level 3 laboratories.

PHC reforms have also affected the work of the microscopy centers assigned to serve each PHC facility. Due to lack of financing, microscopy centers only serve patients in the catchment area assigned to their partnered PHC facility. Sputum smear microscopy is not performed by microscopy centers at all, but rather by laboratories affiliated with each polyclinic in which a sputum collection point is located. This decentralization of smear microscopy services creates additional challenges for EQA efforts. Understaffing at the Level 3 laboratories responsible for EQA poses an additional and significant obstacle in Dnipropetrovsk oblast, Zaporizhzhia oblast, and Luhansk oblast.

Level 2 laboratories

Level 2 laboratories are based in municipal and inter-raion TB facilities. According to regulations that establish the scope of work for laboratories of all levels according to WHO recommendations, Level 2 laboratories should be capable of performing sputum smear microscopy and mycobacterial culture on solid media. MTB+ cultures should be sent to Level 3 laboratory for DST.

Currently, only Kharkiv oblast has a laboratory network that is effectively optimized with responsibilities distributed and streamlined among laboratories of different levels. In this organizational schema, DST is performed by Level 3 laboratories located in oblast TB dispensaries. In other regions, including Dnipropetrovsk oblast, Zaporizhzhia oblast, Luhansk oblast, and AR Crimea, only a few samples are sent to Level 3 laboratories for culture and DST on liquid media using the BACTEC® technique.

Most Level 2 laboratories are well equipped to perform sputum smear microscopy and cultures in solid media. The staff is experienced in sputum smear microscopy and mycobacterial culture and follows WHO-endorsed standard investigation techniques. In all Level 2 laboratories visited, internal microscopy quality control and growth media quality control is performed using control strains with specific characteristics; some laboratories have their own collections of sample strains with verified resistance profiles.

In many laboratories, the total size of the premises and surface area available for work space do not enable the safe and effective flow of samples through the lab. Many labs have no



operating ventilation system, and environmental control in high risk zones is maintained only by Class 2 biosafety cabinets (BSC), which undergo neither scheduled maintenance nor annual certification. Technical and laboratory staff is also unaware of necessary techniques for assessing BSC operation. In the laboratory located in Melitopol city TB dispensary (Zaporizhzhia oblast), the staff has access to two BSCs, but they only use these cabinets when they are switched off, as one is out of

order and staff doubts the effectiveness of the other. Some Level 2 laboratories also lack other necessary equipment. For example, the aforementioned Melitopol laboratory has no high-speed centrifuge, which significantly affects the quality of bacterial culture tests.

Level 2 laboratories are sometimes obliged by local authorities to perform activities that fall outside of their scope of work, such as DST. They also do not have sufficient supplies of equipment and consumables required to conduct DST properly. Specifically, Level 2 laboratories are not supplied with pure chemical substances for DST, forcing them to use pills and pharmaceutical grade solutions instead. In some laboratories, staff could name neither the technique nor the critical concentrations of anti-TB drugs that they use for DST, and standardized instructions for diluting anti-TB drugs for this procedure were unavailable. In some laboratories, DST is performed via the absolute concentration method, but the critical concentrations used are too high (S – 50.0 µg/mL, H – 5.0 µg/mL). One laboratory used high turbidity standards for DST (5 McF), the absolute concentration method, and critical anti-TB

drug concentrations, which meets neither the WHO standard criteria nor the national recommendations for DST. Bacterial species identification is not routinely performed, not even by the accessible culture technique using sodium salicylate media as is done in Kherson oblast. Some laboratories perform a quantity of sputum smear microscopy tests, culture tests, and DSTs that exceed WHO standards. Finally, adequate EQA is performed in Level 2 laboratories only for microscopy, not for culture tests.

Despite inadequate working conditions and inappropriate equipment, staff in Level 2 laboratories is committed to implementing evidence-based techniques. Members of laboratory management and staff emphasized the serious need for trainings in laboratory TB diagnostics and infection, in particular.

Level 3 laboratories

Level 3 laboratories visited by the team followed WHO-standard techniques the majority of the time. Nevertheless, prior to culturing samples using the BACTEC® technique, some laboratories perform direct microscopy in addition to bleach sedimentation microscopy, thus doubling the workload of laboratory staff. In contrast, WHO standards recommend that bleach sedimentation microscopy only be used for culture tests. These laboratories are



equipped in accordance with Ukrainian national regulations; however, in some laboratories, there are no heated magnetic mixers, no incubator ovens for drying smears, and insufficient supplies of dispenser devices. Importantly, the BSCs are certified in only 4 of the observed Level 3 laboratories. In the remaining Level 3 laboratories, certification has not been obtained due to lack of funds.

The majority of Level 3 laboratories have sufficient supplies of consumables; however, some lack test tubes with screw caps for bacteriological examination, and the number of utensils available for DST with BACTEC® technology is often insufficient. The consumables for BACTEC® are supplied by central administrations on an irregular basis and are often received by laboratories with little time remaining before their expiration date. This frequently results in violations of standard examination protocols. Numerous necessary chemical materials are entirely unavailable; some laboratories have small quantities of frozen aliquots of pure chemical substances for DST, but these supplies are only sufficient for one to one and a half months of work.

The standard protocol for examination is generally followed, but it is frequently monitored and recorded only by the laboratory staff, as the electronic database is often unavailable in the laboratory. This poses challenges for coordinated monitoring and reporting. When conducting DST, identification of mycobacterial species is only performed by bacterial culture, as chemical and immunochromatographic assays are unavailable in Ukraine.

Internal quality control is performed regularly, with appropriate records maintained. Level 3 laboratories have recently undergone EQA for DST capabilities as part of the EQA System, but there are no plans to routinely repeat this procedure. In general, the laboratory staff use standard operating procedures when working with contaminated materials; however, Project staff observed improper use, storage, and disposal of personal protective equipment.

Physical access to laboratories is effectively limited, which helps to ensure successful IC. Many laboratories have undergone repairs and now possess sufficient surface area for laboratory work, which is divided into different work zones. In contrast, the available surface area and floor plans in Dnipropetrovsk oblast, Odesa oblast, and Kherson oblast laboratories do not allow for the effective flow of samples or personnel through the lab.

Summary of findings regarding laboratory diagnostics

Overall, this needs assessment determined that Level 1 laboratory performance is mostly satisfactory, although such diagnostic-related procedures as patient selection, sputum smear microscopy, and microscopy EQA could be considerably improved. More significant problems were identified in Level 2 and Level 3 laboratories, mostly related to poor implementation of standard operational procedures and gaps in the supply chain for consumable materials. Laboratory IC was found to be poor in all laboratories, regardless of their level.

Infection Control (IC)

Organizational and administrative IC measures

In most TB health care facilities, IC measures are implemented primarily to prevent contact infection, not droplet nuclei (airborne) infections. Commonly implemented control measures include:

- Maintaining the general cleanliness of the health care facility and its territory.
- The use of disinfection solutions and autoclaves.
- Waste decontamination and disposal.
- Sewage decontamination with chlorine solution, according to Ukrainian regulations.

Health care administration and staff understand the need for effective controls to reduce the risk of occupational TB infection among medical staff and nosocomial transmission of TB among patients. Some health care administrators are aware of internationally recognized, WHO-recommended TB IC mechanisms, but the majority of health care workers need training on this subject.

All facilities assessed maintained some form of administrative control mechanism. Examples include the establishment of IC commissions and the delegation of responsibility for IC to specific staff representatives. Funding for IC has not been allocated to PHC facilities in all regions. Only the TB dispensaries in Donetsk oblast and the city of Kryvyi Rih (Dnipropetrovsk oblast) have filed specific requests justifying the need for such funding.

Most sputum collection sites are located outdoors, which is the most cost-effective way of safely performing this high-risk procedure. In some health care settings, specially designated rooms are used for sputum collection. These rooms typically do not comply with IC standards. For example, there is no exhaust ventilation in the Dnipropetrovsk oblast TB dispensary, and natural ventilation is not properly used. A similar situation was observed in the Kyiv city TB hospital.

Some good examples of effective patient triage were observed at the entrance to PHC facilities in Donetsk oblast, where persons with suspected TB and other respiratory symptoms were identified immediately and referred for further testing. Both adults and children are isolated during admission, and sputum collection is performed in a designated site outside of the facility. Project staff found multiple examples of urgent smear microscopy being performed for patients with suspected TB for the purposes of rapid detection of more contagious strains and the immediate hospitalization, treatment, and isolation of patients with a confirmed diagnosis. However, waiting areas in many PHC facilities are crowded, and no environmental control measures are taken, despite the fact that these premises can host smear-positive patients.

Several TB dispensary buildings have the capacity to split patient inflows according to risk of transmission; however, some dispensaries still employ more obsolete measures of triage, which distinguish patients according to clinical symptoms or age. Furthermore, many staff members do not understand the need to triage patients. For this reason, common facilities, such as cafeterias, are often open for use by all patients in oblast TB care facilities. It is also common practice to situate wards for MTB+ and MTB- patients together in a single department.

Nearly all hospitals in the oblasts visited by the Project are overcrowded, meaning that the number of patients exceeds WHO endorsed sanitary norms, which indicate no more than six beds for every 18 square meters of hospital floor space, by 200-300%. Moreover, risk zones are not delineated in the majority of hospitals and outpatient departments.

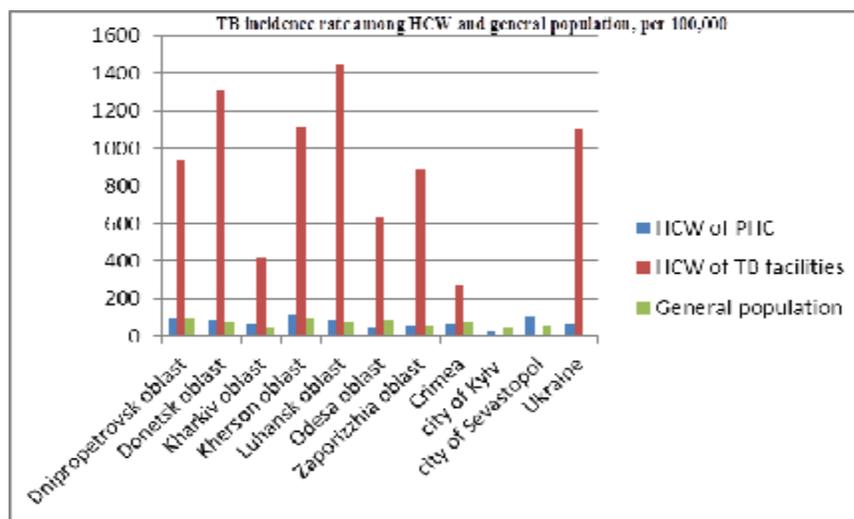


Figure 4. TB incidence among health care workers (HCW) and the general population of Ukraine, cases per 100,000

As rapid molecular and genetic diagnostic tests for MTB species identification and DST are unavailable, there is no opportunity for early triage of MDR-TB or other highly infectious patients, which creates a serious risk for nosocomial infection. Occupational TB morbidity rates are high (0.6-0.8 cases per 10,000 employees per year), indicating a risk of infection among health care workers that is 12-16 times higher than for the rest of the Ukrainian population (see Figure 4). This high rate of occupational TB infection among health care workers implies equally high or higher rates of nosocomial TB transmission between patients. Unfortunately, the unavailability of genetic fingerprinting techniques for bacterial strains in Ukraine prevents confirmation of this assumption.

Some oblast TB dispensaries have drafted blueprints and budget estimates for the construction of new premises in which to locate MDR-TB departments and bacteriological laboratories, which would include appropriately demarcated risk zones. Unfortunately, locating adequate funding for such upgrades continues to be a challenge. The current building codes for Ukrainian TB facilities have been in effect since 2001, and they do not meet current IC requirements.

In most AIDS centers, triage procedures are not designed to separate patients with TB symptoms, and proper measures for respiratory hygiene (to mitigate the spread of disease though airborne droplets produced by coughing) are not promoted. WHO standards for the identification and management of opportunistic infections are also poorly followed. In fact, the practice of “diagnostically” hospitalizing patients without a confirmed TB diagnosis to high risk TB hospitals continues.

While the heads of all health care facilities possess copies of the WHO document *Standards of TB Infection Control in Healthcare Settings, Congregate Settings, and Households* in Ukrainian, these critical guidelines are not made available to the entire staff. Despite the fact that this document was issued in 2010, many health care professional remain unfamiliar with its key messages.

Environmental control

With the exception of Donetsk oblast, environmental control activities in TB health care facilities are not in place in any USAID-supported regions.

In all facilities, traditional, unshielded ultra-violet germicidal irradiation (UVGI) devices are used to decontaminate the air and hospital surfaces when no people are present. Most facilities implement conventional operating schemes for these devices (“quartz disinfection” 2-3 times a day, with records produced each time they are used). The majority of UVGI devices are equipped with good quality Philips TUV-30 lamps, which provide sufficient electro-magnetic output for sterilization (ultra-violet light with a wave length of 254nm at $100 \mu\text{W}\cdot\text{s}/\text{cm}^2$). Despite these advantages, UVGI devices are not effective at reducing the concentration of infectious droplet nuclei in sites where such airborne droplets are continuously generated (e.g. wards and hallways of the high risk departments, waiting areas, laboratory high risk zones, and bronchoscopy rooms). Locally endorsed protocols for the “quartz disinfection” of premises are inadequate. For example, such protocols require a fixed exposure time and do not require use of the device after possible generation of infectious droplet nuclei, such as sputum collection and the counseling of MTB+ patients. Regular cleansing of the lamps with a 70% alcohol solution is not common practice.

Some facilities use recirculating air decontamination devices in high risk zones (mainly mobile and wall-mounted UVGI recirculation devices). Such devices do not actually decrease the risk of infection. In fact, they may create false sense of security, resulting in compensatory neglect of other, more effective means of IC.

In general, the technical support staff of TB facilities appear committed to implementing effective environmental controls and to conducting regular maintenance and performance monitoring of IC equipment. Such commitment is especially high in the city of Kyiv, Dnipropetrovsk oblast, Luhansk oblast, and AR Crimea. At the same time, the staff’s knowledge of current IC procedures is insufficient, and the necessary regulatory guidelines are not available to them.

Personal protective equipment

Medical staff at TB facilities and AIDS centers uses FFP2 or FFP3 respirators some of the time; however, an individual respiratory protection program is not fully implemented in any region. Medical staff's knowledge about the correct fitting, use, storage, and disposal of respirator equipment is insufficient, as are the funds necessary for purchasing these respirators. Coordinators are not appointed to implement any



respiratory protection program. The need to purchase additional respirators is not properly recognized or documented, and neither the equipment nor instructions for proper fit-tests are available. In some sites, respirators have been purchased that are not approved for TB protection and are of a low quality, such as the “Lepestok” and “Alina” varieties. In other sites, respirators have been purchased that are known to offer lower levels of protection than is needed (such as FFP1 instead of FFP2 or FFP3 respirators). Training activities designed to teach patients cough etiquette and respiratory hygiene are currently being conducted in some facilities.

Summary of findings relating to IC

In all Project regions, with the exception of Donetsk oblast, serious gaps were identified in IC policy and implementation. Often, it is the head of the health care facility who demonstrates (and models to staff) a low commitment to improving the quality and implementation of IC measures. This attitude has an effect on the entire facility. Apart from financial resources, significant educational and advocacy campaigns are needed to improve knowledge, attitudes, and practices related to IC among health care staff.

TB/HIV Co-infection Services

In most USAID-supported regions, the coverage of HIV testing in TB hospitals is quite high. In contrast, HIV testing is rarely conducted in outpatient TB care. Not every TB health care facility maintains voluntary testing and counseling (VTC) logs, and, as a result, the VTC data for 2011 is not easily available and remains unanalyzed.

In nearly all of the oblasts visited, a full-time or part-time infection disease specialist is included in staffing plans of regional TB facilities. Only in AR Crimea, Sevastopol city, Kharkiv oblast, and Odesa oblast do the staffing plans not include such a position. In these four regions, infectious disease specialists provide their services only when appointed to consult with specific TB patients. HIV management among TB patients is not routine.

In Odesa oblast, the local health administration has issued an order regarding the diagnosis of extrapulmonary TB in PLWH. This order specifies the health care facilities to which PLWH presenting with suspected extrapulmonary TB should be referred.

Project staff noted an increase in the rates of HIV-related TB cases in some oblasts, which can be interpreted as a sign that TB detection among PLWH has improved. This appears to be the case especially in regions supported by HIV-service NGOs, as these organizations often

provide funding for expensive diagnostic techniques. The staffing plans for each oblast's AIDS Center provides for a quarter-time (or higher) TB specialist.

In all the regions, chest x-ray remains the primary method for TB-screening among PLWH. Sputum smear tests, tuberculin skin tests (the Mantoux test), and symptomatic screening are also used; however, reports indicate that coverage of diagnostic testing of any form varies from 78% to 89% across regions of so-called "active dispensary groups." Thus only PLWH who adhere to patient follow-up procedures are consistently screened for TB. If a patient's adherence to HIV treatment is insufficient or if the patient does not visit an HIV specialist on a regular basis the likelihood that he or she will be screened for TB is low.

Five AIDS Centers (those located in AR Crimea, Donetsk oblast, Odesa oblast, the city of Kyiv, and the city of Sevastopol) have no sputum collection sites at all. Other AIDS Centers do not have a sufficient supply of sputum containers.

In all regions, the ineffective interaction of HIV and TB services complicates the diagnosis of extrapulmonary TB. This issue is rarely treated as a concern by PHC staff. The high cost of such diagnostic tools as CT scanning, MRI, and diagnostic endoscopy also contribute to complications and delays in diagnosis. A lack of TB specialists who are experienced in the detection and management of extrapulmonary TB exacerbates the problem even further.

The overall incidence of HIV-related TB, including its pulmonary and extrapulmonary forms, varies from region to region (see Figure 5). In the neighboring Dnipropetrovsk, Kharkiv, Donetsk, and Luhansk oblasts, for example, the incidence rate of HIV-related TB was 22.8, 2.7, 18.3, and 5.9 per 100,000 persons, respectively, in the year 2011. In

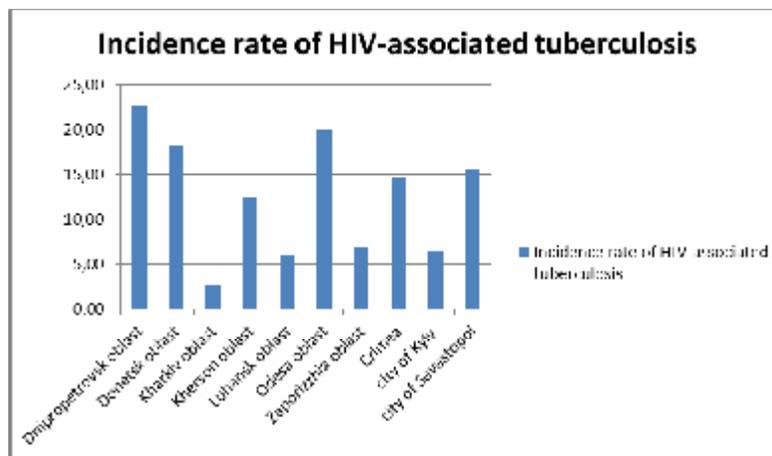


Figure 5. Incidence of HIV-associated TB infection, cases per 100,000

contrast, the local prevalence of risk factors for HIV and TB in each of these oblasts appears to be quite similar. This means that the variation in recorded incidence of HIV-related TB is most likely a caused by poor HIV diagnostics among TB patients and poor TB detection in PLWH, not by a true variation in these incidence rates.

In many regions, the directors of AIDS Centers claimed that anti-retroviral therapy (ART) is administered to each patient according to their prescribed regimen. Many also claimed that there are currently no drug shortages to speak of. However, detailed conversations with doctors who treat patients in the AIDS Centers revealed that the only patients who actually receive ART are those who satisfactorily adhere to treatment, those with stabilized TB (i.e. TB that has responded to treatment), those with no signs of active hepatitis, and those who are already two months into their TB treatment regimen. Delayed administration of ART is fueled by insufficient knowledge among infectious disease and TB specialists of the

pathogenesis, diagnostics, and treatment of inflammatory responses characteristic of immune reconstitution syndrome in PLWH. In most regions, ART coverage among TB/HIV patients ranges from 30-50% of those patients who should be receiving the treatment. In Kyiv, TB specialists and infectious disease specialists are unaware of the WHO's recently revised standards for administering ART to patients undergoing treatment for TB. For this reason, ART is often administered at the end of the intensive phase of TB treatment, rather than simultaneously with TB treatment, as is recommended by the WHO. Physicians often justify the delay of ART in these cases with claims that staggering the initiation of treatments in this way will improve a patient's ability to tolerate both treatments at the same time.

Sometimes, TB treatment is administered to HIV-positive patients by infectious disease specialists without verification of the diagnosis. This is especially true among HIV-positive patients with smear-negative and extrapulmonary TB. Unfortunately, such cases are not recorded either in the registry or on reporting forms, as the infectious disease specialist administers this treatment "over the head" of the local TB facility. While they acknowledge that it does happen, infectious disease specialists claim that such cases are rare. In a number of regions, patients are referred to the Gromashevskiy Institute of Infectious Diseases or to the Yanovskiy Institute of Phthisiology and Pulmonology for consultation, rather than to the head of the local TB service. These patients often receive prescriptions for TB treatment before their diagnosis is verified, which generally does not comply with WHO standards of TB management. This also makes case registration and treatment monitoring impossible, as these patients are not registered at their local TB facility. Thus, these conditions are ripe for the (intentional or unintentional) artificial manipulation of statistical data in each region. Importantly, the matter of assigning cause of death to TB/HIV patients who have died also remains unsolved in all regions. Staff at AIDS Centers often report TB as the main cause of death, whereas staff at TB centers report the death as AIDS-related.

Administration of the isoniazid preventive course to PLWH is not common practice. While such preventative care, when provided, is administered in AIDS Centers in the majority of regions, the assessment team identified cases in which the isoniazid preventive course was provided to patients in TB dispensaries, which increases these patients' risk of nosocomial infection by virtue of the fact that they are regularly reporting to a TB facility. In general, the isoniazid preventive course coverage among PLWH is very low, reaching between 5%-40% of the total population of PLWH. Overall, Ukraine's health care professionals are not convinced of the efficacy of the isoniazid preventive course for PLWH. This attitude among medical staff has a negative effect on patients' adherence to this course of treatment.

Summary of Findings related to TB/HIV Co-infection Services

Overall, the 10 USAID-supported regions have made notable steps toward improving cooperation between TB and HIV services. A full-time or part-time TB specialist is on staff in every oblast AIDS Center. In some regions, special departments have been established for treating PLWH with smear-negative and/or extrapulmonary TB. Both Odesa oblast and Donetsk oblast administrations have endorsed local orders supporting the improvement of TB/HIV care. In every region, Oblast or City CMCs are functioning to combat the HIV and TB epidemics. Health administrations in all oblasts have endorsed local orders for working groups to coordinate, monitor and evaluate the effectiveness of TB control activities in the region. Such orders have also been issued to outline procedures of interaction between TB and HIV service facilities as well as monitoring and evaluation (M&E) indicators with which to ensure the effectiveness of TB/HIV control activities. Administrators of both HIV service and TB service facilities often rate the level of integration of care as satisfactory and do not deem any changes in the system to be immediately necessary.

Nevertheless, cooperation is deficient in some areas; this prevents these two services from functioning together effectively. Specifically, PHC providers are not represented in the CMCs, and the reporting and analysis of data, the frequency of group meetings, the taking of minutes at meeting, and the delegation of responsibilities on these boards is happening sporadically—if at all. Due to the structural isolation and differential regulations governing TB care and HIV care in Ukraine, a situation about which partner specialists are not well enough aware, these two services often raise mutual complaints about over- and under-diagnosis, non-compliance with TB or HIV detection protocols, violation of treatment standards, and more, rather than fostering a dialogue of collaboration. However, some regions do regularly cross-check the statistical data on TB/HIV case detection, in line with approved M&E procedures.

In most regions, PHC facilities are not involved in the screening of PLWH for TB or in any other diagnostic processes. They are excluded from these processes for many reasons, including limited knowledge among the staff and legislative barriers that hinder the exchange of medical records.

TB is currently the most prevalent opportunistic infection among PLWH in Ukraine. Some steps have been taken to optimize the management of co-infected individuals, including contiguous counseling by HIV and TB specialists, and the exchange of statistical data and medical information begun to improve. On the other hand, Ukraine remains the one of the few countries where TB and HIV are managed by different services; therefore, the integration of care could be significantly improved.

CONCLUSION

The data obtained during this baseline assessment reveal that deficiencies in Ukraine's TB control and treatment efforts, which were described in the WHO's *Review of the National Tuberculosis Program in Ukraine (10–22 October 2010)*, are still prevalent. Currently, it appears that none of the recommendations made in the 2010 WHO report have been implemented. Broadly speaking, both clinicians and health care administrators are aware of international standards in TB care; however, a deep-seated skepticism of WHO-recommended practices still remains, and TB specialists prefer to rely on their own clinical experience and expertise rather than the evidence-based practices that the WHO has endorsed. Major administrative and financial difficulties also act as barriers to the implementation of up-to-date TB control measures, especially TB diagnosis and IC strategies.

Based on these findings, the Project intends to focus its efforts on improving TB control interventions by means of technical assistance, the cascade training system, and advocacy for appropriate decision-making at the regional and the local level.

ANNEX C. LIST OF SUB-AWARDS

The following table lists STbCU sub-awards for the period April 2, 2012-September 30, 2013.

Name	Contact Information	Title	Duration	Amount (USD)	Description
Project Hope	Mariam Sianozova, +37 477 653 011	AID-121-TO-12-00001-00-PROJECT HOPE	April 3, 2012- April 1, 2017	\$4,665,156	Providing technical expertise in infection control, MDR-TB and XDR-TB, TB in prisons, DOTS, community-based DOTS, and Infection Control.
GTBI	Eileen Napolitano, (973) 972-3272	AID-121-TO-12-00001-00-GTBI	August 1, 2012- December 31, 2016	\$176,481	Technical expertise and implementation support for scientific and research activities related to program management of TB, MDR-TB and TB-HIV coinfection.
PE Mykhaylo Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#3 logistics services	Apr 17 - May 7, 2012	\$7 809, 19	workmeeting of national and intl TB specialists on Apr 22-24, 2012 in Kyiv
PE Nina Dziubych	Tetyana Bugaenko, +38 050 544 33 22	#7 logistics services	Aug 28 - Sep 21, 2012	\$12 001,39	3-day conference "Focusing on TB issues: medical education in the conditions of health care system reform" held on Sep 9-11, 2012 in Alushta/Crimea
PE Mykhaylo Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#7 logistics services	Aug 29 - Oct 29, 2012	\$1 818,75	round table "Discussion on improvement of existing policies in the field of TB infection control in Ukraine" at Riviera Hotel on Sep 7, 2012
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	N/A	Sep 14-21, 2012	\$3 867, 19	2-day team building training on Sep 17-18, 2012 in Puscha Lisova/Kyiv oblast
LLC Toleran	Tetyana Velyka, +38 096 81 44 888	#2 logistics services	Sep 26 - Nov 2, 2012	\$30 801,65	project official opening held in Kyiv on Oct 8-10, 2012
PE Ihor Suprunov	Alina Bryl' +38 050 419 8996	#10/3/12 logistics services	Oct 3 - Nov 2, 2012	\$5 766,81	1-day Seminar "Introduction of Infection Control in health care facilities of Odesa oblast" in Odesa on Oct 25, 2012

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Ihor Suprunov	Alina Bryl' +38 050 419 8996	#10/17/12 logistics services	Oct 17 - Nov 2, 2012	\$8 875,62	5-day training on "TB Diagnostics by Smear Sputum Microscopy Method" in Dnipropetrovsk on Oct 22-26, 2012
NGO Stop TB, Donetsk	Tatyana Borodina +38 050 474 8269	N/A	Oct 17 - Nov 28, 2012	\$3 073,11	5-day training "Infection Control in Health Institutions of Ukraine" held During October 29 - November 2, 2012 in Donetsk
PE Ihor Suprunov	Alina Bryl' +38 050 419 8996	#10/17/12-2 logistics services	Oct 10 - Nov 21, 2012	\$7 260,19	5-day training on "TB Diagnostics by Smear Sputum Microscopy Method" in Dnipropetrovsk on Nov 5-9, 2012
CO "Analytical Center Socioconsulting"	Iryna Demchenko +38 067 500 7180	STCU-FPA-01-C; medical survey	Oct 30, 2012 - Jan 10, 2013	\$33 848,67	Development of 3 survey tools: application for evaluation of HCWs' infection control (IC) knowledge on proper IC practice, semi-structured patient interviews on Tb service provision, and in-depth gender oriented interviews. Followed by conducting survey and data analysis.
LLC Toleran	Tetyana Velyka, +38 096 81 44 888	#8/11 logistics services	Nov 8 - Dec 3, 2012	\$13 818,09	two 5-day trainings for general practitioners "Management of a TB case" in Dnipropetrovsk on Nov 12-16, 19-23 2012
LLC Toleran	Tetyana Velyka, +38 096 81 44 888	#9/11 logistics services	Nov 9 - 22, 2012	\$1 665,27	1-day seminar "Reliable support of the government and civil society to TB patients released from prisons" in Kherison on Nov 13, 2012
LLC Toleran	Tetyana Velyka, +38 096 81 44 888	#9/11 logistics services	Nov 12-22, 2012	\$12 278,59	2-day seminar "Major problems od TB/HIV co-infection and ways of their addressing" in Kherison on Nov 14-15, 2012
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	#21/11 logistics services	Nov 13-22, 2012	\$3 431,98	1-day seminar "IC in health care facilities of Luhansk oblasť" for 110 participants on Nov 21, 2012 in Luhansk
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	#22-23/11 logistics services	Nov 14-26, 2012	\$3 258,51	2-day seminar "HIV/AIDS patients treatment strategy and co-infection in Kharkiv region" for 25 participants on Nov 22-23, 2012 in Kharkiv

Name	Contact Information	Title	Duration	Amount (USD)	Description
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	#27/11 logistics services	Nov 19-28, 2012	\$982.50	STbCU project introductory seminar on Nov 27, 2012 in Sevastopol
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	#27/11 logistics services	Nov 27 - Dec 17, 2012	\$15 163,17	two 5-day trainings on TB case management in primary health care facilities on Dec 3-7 & Dec 10-14, 2012 in Kherson
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	#06/12/2012 logistics services	Nov 29 - Dec 12, 2012	\$660,00	1-day seminar on TB case management in primary health care facilities on Dec 6, 2012 in Kharkiv
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#10 logistics services	Nov 28 - Jan 10, 2013	\$8 756,62	four 2-day trainings on DOTS for nurses (25 participants on each training) held in Odesa city, Valentina (Kurortnyy) hotel on Dec 3-4, 5-6, 17-18, 19-20 '2012
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#11 logistics services	Nov 13 - Jan 10, 2013	\$4 428,75	2-day seminar on IC for 33 epidemiologists held in Odesa, Kurortnyy hotel on Dec 18-19, 2012
LLC Kasht Event Service	Alla Kakysh, +38 044 222 52 82	#24-27.12.12 logistics services	Dec 5-Jan 1, 2013	\$5 324,85	two 2-day seminars on Monitoring & evaluation of TB diagnostics & treatment indicators on Dec 24-25 & Dec 26-27, 2012 in Odesa
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#12/03/12 logistics services	Dec 3 - 24, 2012	\$1 499,31	seminar on TB IC in Simferopol on Dec 13, 2012
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#17/12 logistics services	Dec 17-27, 2012	\$18 288,01	conference "Topical issues of introducing modern TB infection control strategy in the context of reform of healthcare system and medical education" in Kyiv on Dec 20-21, 2012
NGO "Gromads'ke naukovo-medychne ob'ednannya phtisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jan 4 - Jan 8, 2013	\$997,89	1-day Seminar on changes to standards of care for patients with resistant TB for TB specialist and infectious diseases doctors

Name	Contact Information	Title	Duration	Amount (USD)	Description
Panagora Group	Elizabeth A. Bassan, (202) 460-3025	AID-121-TO-12-00001_PanagoraGroup_01	Jan 14 - Feb 28, 2013	\$22 900,00	Initiate the development and creation of a TB training and information resource center (TIRC) under Objective 1.
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jan 23 - Mar 5, 2013	\$6 538,02	5-day training "TB detection and diagnostics by sputum smear microscopy"
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jan 23 - Mar 5, 2013	\$10 993,89	5-day training "TB case management in primary health care facilities"
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#10/01 logistics services	Jan 10 - Mar 13, 2013	\$1 985,94	1-day round table "DOT TB for nurses" in Simferopol on Jan 18, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#10/01 logistics services	Jan 10 - Mar 13, 2013	\$2 161,35	2-days round table "DOT TB for nurses" in Sevastopol on Jan 22-23, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#10/01 logistics services	Jan 10 - Mar 13, 2013	\$3 123,23	seminar "Organization of the regional boards of activities on TB resistance and TB/HIV" in Kherson on Feb 25-26, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#29/01/13 logistics services	Jan 29 - Feb 19, 2013	\$9 943,29	5-day training "TB case management in primary health care facilities" in Zaporizhia on Feb 4-8, 2013
Ukrainian Bavarian Management Training Center	Svitlana Bogdanova, +38 066 339 7406	#29/01 logistics services	Jan 29 - Feb 21, 2013	\$718,54	1-day round table "Coordination of Joint Efforts between TB and HIV/AIDS Services and Sentence Enforcement department in Odesa Oblast" in Odesa on February 7, 2013.
Ukrainian Bavarian Management Training Center	Svitlana Bogdanova, +38 066 339 7406	#29/01 logistics services	Jan 29 - Feb 21, 2013	\$2 711,58	1-day oblast workshop "Evaluation of Infection Control Implementation In Odesa Healthcare Facilities" in Odesa on February 6, 2013.

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Vadym Korolyuk	Vadym Korolyuk +38 050 583 4707	STCU-FPA-02-C; project website development	Jan 21 - Aug 24, 2013	\$1 115,24	Development of the Project website and training responsible staff to manage the site content
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#01/02 logistics services	Feb 1 - 22, 2013	\$512,55	1-day round table "Inner and internal control of the laboratory TB diagnosis in Crimea" in Sevastopol on Feb 14, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#01/02 logistics services	Feb 1 - 22, 2013	\$825,80	1-day round table "Inner and internal control of the laboratory TB diagnosis in Crimea" in Simferopol on Feb 12, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#01/02 logistics services	Feb 1 - 22, 2013	\$2 924,45	1-day seminar on "TB/HIV co-infection" for TB-dOctors and infectionists in Simferopol on Feb 13, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 234,79	seminar on IC for epidemiologists in Kherson on Feb 26, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$3 626,49	two 1-day seminars "Implementation of IC measures in healthcare settings of Luhansk oblast" in Alchevsk on Feb 20-21, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#1 logistics services	Feb 18 - Mar 7, 2013	\$6 348,98	5-day "Training for STbCU laboratory coordinators" in Kharkiv on February 25 - March 1, 2013
PE Andriy Sokolyansky	Alina Bryl" +38 050 419 8996	#8/02/13 logistics services	Feb 8 - Mar 14, 2013	\$1 789,26	workgroup meeting "Results of TB control activities in Kharkiv oblast in 2012" in Kharkiv on Feb 14, 2013
PE Andriy Sokolyansky	Alina Bryl" +38 050 419 8996	#8/02/13 logistics services	Feb 8 - Mar 14, 2013	\$1 237,36	round table "External quality assurance of sputum smear microscopy in Level 1 laboratories of Kharkiv oblast in 2012" in Kharkiv on Feb 15, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$4 010,29	conference "World TB day: increasing awareness and reinforcing efforts to combat TB epidemic" in Kherson on Mar 14, 2013

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 932,90	5-day training "TB detection and diagnostics by sputum smear microscopy. Quality assurance of test results" in Kyiv on Mar 11-15, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 088,36	2-day round table for bacteriologists of 2nd and 3rd levels "Microbiological diagnostics of TB. Securing of quality control of microbiological diagnostics" in Kharkiv on Mar.5-6, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$4 533,93	5-day training "TB case management in primary health care facilities" in Sevastopol on Mar.18-22, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$9 909,36	6-day Drug Resistance Research (DRS) preparatory visit to Kyiv, Kharkiv, Donetsk on Mar.17-22, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$5 158,51	World TB Day conference "TB care and control in Odesa oblast: challenges and solutions" in Odesa on Mar 19, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$920,61	seminar "Implementation of IC activities in healthcare settings of Kharkiv oblast" in Kharkiv on Mar 15, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$969,08	seminar "Implementation of IC activities in healthcare settings of Kharkiv oblast" in Kharkiv on Mar 14, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 685,35	round table on Laboratory diagnostics issues in Kherson on Mar 15, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 024,02	round table "Crimean community and TB. New strategic approach towards combating TB epidemic in Ukraine" in Simferopol on Mar.6, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 351,85	seminar devoted to the World TB Day in Sevastopol on Mar 20, 2013

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$337,25	presentation devoted to the World TB Day in Odesa on Mar 21, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$341,08	presentation devoted to the World TB Day in Kherson on Mar 24, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$2 021,79	2-day seminar "TB/MRTB cases management" in Kharkiv on Mar 19-20, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$2 343,18	2-day seminar "TB/MRTB cases management" in Kharkiv on Mar 21-22, 2013
Ukrainian Bavarian Management Training Center	Svitlana Bogdanova, +38 066 339 7406	np number, logistics services	Feb 28 - Mar 20, 2013	\$1 799,38	Round table "Internal and external quality assurance in TB laboratory diagnostics in Odesa oblast" in Odesa on March 5, 2013. Preliminary number of participants 43 ppl.
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 764,74	DRS visit to Kherson on Apr 11-12, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 721,42	work meeting "Integration of TB/HIV services and effective patient referral. Optimal models for provision of TB/HIV care" in Odesa on May 28, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$2 193,58	1-day seminar "Improvement of granting TB services on the first level of medical service. Modern approach to the lung health (PAL's intl experience)" in Simferopol on May 22, 2013
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 746,83	1-day DRS training in Kherson on May 28, 2013

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Natalia Kazanikova	Tetyana Velyka, +38 096 81 44 888	#20130204 logistics services	Feb 4 - Aug 30, 2013	\$1 612,59	1-day seminar "TB and MDR-TB case management in line with the Unified Clinical Protocol for priMary, secondary (specialized) and tertiary (highly specialized) healthcare" in Simferopol on Jun 14, 2013
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Feb 22 - Mar 13, 2013	\$2 042,48	1-day conference "Results on TB treatment outcome on cohort analysis in 2012"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Mar 12 - Apr 17, 2013	\$5 223,14	2-day seminar "TB case management in priMary health care facilities. The role of medical nurses"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Mar 12 - Apr 17, 2013	\$4 647,54	2-day seminar "TB case management in priMary health care facilities. The role of medical nurses"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Mar 12 - Apr 17, 2013	\$1 965,87	1-day seminar "Implementation of infection control standarts in healthcare settings of Dnipropetrovsk oblast"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Mar 12 - Apr 17, 2013	\$2 112,05	1-day conference "TB case management"
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#2 logistics services	Mar 5-14, 2013	\$1 118,79	regional seminar on Practical aspects of TB/HIV co-infection in Sevastopol on March 6 '13

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#4 logistics services	Mar 22 - Apr 9, 2013	\$1 017,10	round table "Epidemiologic situation on TB/HIV in Zaporizhia oblast. Analysis of the reasons of mortality from TB/HIV and their coding" in Zaporizhia on March 28, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#14/03/13 logistics services	Mar 14 - Apr 3, 2013	\$2 235,71	1-day seminar "Implementation og IC measures in healthcare settings of Luhansk oblast" in Krasny Luch on Mar 20, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#07/03/13 logistics services	Mar 7 - 20, 2013	\$3 849,80	1-day seminar "Implementation og IC measures in healthcare settings of Donetsk oblast" in Donetsk on Mar 12, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#15/03/13/1 logistics services	Mar 15 - Apr 3, 2013	\$1 792,52	1-day seminar "Results of implementation of TB control activities in Luhansk oblast in 2012" in Luhansk on Mar 27, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#15/03/13 logistics services	Mar 15 - Apr 4, 2013	\$2 663,21	1-day seminar "Implementation of IC standards in healthcare settings of Luhansk oblast" in Luhansk on Mar 21, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#18/03/13 logistics services	Mar 18 - Apr 4, 2013	\$406,33	presentation devoted to the World TB Day in Donetsk on Mar 21, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#19/03/13 logistics services	Mar 19 - Apr 4, 2013	\$902,05	flashmob dedicated to the World TB Day in Luhansk on Mar 21, 2013
NGO Stop TB, Donetsk	Tatyana Borodina +38 050 474 8269	N/A	Mar 27 - Apr 25, 2013	\$9 749,71	5-day training "TB IC in medical facilities of Ukraine" in Donetsk on Apr 1-5, 2013
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Apr 15 - May 20, 2013	\$3 955,35	1-day seminar "Improving diagnostics and treatment of patients with TB, including MDR-TB in compliance with international standards and MOH Order #1091 dated December 21, 2012 "Unified Clinical Protocol of PriMary, Secondary (Specialized) and Tertiary (highly specialized) healthcare. Tuberculosis"

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#5 logistics services	Apr 5-17, 2013	\$816,19	seminar for TB dOctors "Improvement of TB services in Kyiv in growth of multidrug-resistant tuberculosis " in Kyiv on April 9, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#7 logistics services	Apr 15 - May 7, 2013	\$5 682,90	2-day working group on implementation of TB/HIV component of the USAID STbCU in Ukraine project in pilot regions in Irpin/Kyiv oblast on Apr 23-24, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#9 logistics services	Apr 22 - May 17, 2013	\$3 642,73	1-day seminar "Improvement of TB services provision on primary level of medical services. Modern approach to health of lungs (init approach PAL)" in Kyiv on Apr 25, 2013
PE Andriy Sokolyansky	Alina Bryl" +38 050 419 8996	#11/04/13 logistics services	Apr 11 - 26, 2013	\$1 696,57	round table "Sputum smear quality assurance in laboratory TB diagnosis" in Luhansk on Apr 18, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#10 logistics services	May 13-30, 2013	\$15 754,17	DRS training in Kharkiv on May 20-24, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#12 logistics services	May 14-20, 2013	\$3 335,33	conference "Management of chemo-resistant TB, including MDR-TB in compliance with international standards and updated National protocols" in Zaporizhia on May 15, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#11 logistics services	May 13-30, 2013	\$6 601,32	2-day seminar "Integration of TB/HIV services and effective patient referral. Optimal models for provision of TB/HIV care" in Kharkiv on May 21-22, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#14 logistics services	May 17 - Aug 30, 2013	\$10 821,30	5-day training "TB case management in primary health-care facilities" in Kyiv on May 27-31, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko, +38 050 544 33 22	#14 logistics services	May 17 - Aug 30, 2013	\$1 626,58	seminar on "TB drug resistance survey (DRS)" in Kharkiv on May 29, 2013

Name	Contact Information	Title	Duration	Amount (USD)	Description
NGO Stop TB, Donetsk	Tatyana Borodina +38 050 474 8269	N/A	May 14 - 31, 2013	\$14 471,93	5-day training "TB IC in medical facilities of Ukraine" in Donetsk on May 20-24, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#17/05/13 logistics services	May 17 - Aug 30, 2013	\$2 509,72	working group "Integration of TB/HIV services and effective patients re-direction" in Luhansk on Jun 10, 2013
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#17/05/13 logistics services	May 17 - Aug 30, 2013	\$8 997,71	5-day training "TB case management in priMary health care facilities" in Luhansk on June 10-14, 2013
NGO Stop TB, Donetsk	Tatyana Borodina +38 050 474 8269	N/A	May 14 - May 31 2013	\$14 036,00	5-day training on "TB infection control in health facilities of Ukraine" to be held on June 3-7, 2013 in Donetsk.
PE Andriy Sokolyansky	Alina Bryl' +38 050 419 8996	#17/05/13 logistics services	May 17 - Aug 30, 2013	\$2 133,24	work group "Integration of TB/HIV services and effective re-direction of patients. Optimal models of rendering medical help on TB/HIV" in Donetsk on Jul 17, 2013
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	May 13 - May 30, 2013	\$14 295,71	5-day training "TB case management in institutions of priMary health care"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	May 1 - Jul 4, 2013	\$518,70	1-day round table "Issues of optimization and restructuring central medical advisory committees in Dnipropetrovsk oblast"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	May 20 - Jun 19, 2013	\$2 164,33	1-day seminar "Experience in the use of the rapid tests in the diagnosis of MDR TB"

Name	Contact Information	Title	Duration	Amount (USD)	Description
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	May 22 - Jun 20, 2013	\$18 434,16	5-day training "TB case management in institutions of primary health care"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	May 22 - Jun 26, 2013	\$12 620,18	5-day training on "TB case detection and diagnostics by sputum smear microscopy"
NGO Stop TB, Donetsk	Tatyana Borodina +38 050 474 8269	N/A	Jun 21 - Sep 12, 2013	\$373,70	1-day working group on "TB infection control in health care facilities of Ukraine" held in Donetsk on July 4, 2013
NGO Stop TB, Donetsk	Tatyana Borodina +38 050 474 8269	N/A	Jun 21 - Sep 12, 2013	\$5 787,91	2-day training on "TB infection control in health care facilities of Ukraine" held in Donetsk on July 2-3, 2013
PE Natalia Kazanikova	Tatyana Velyka +38 096 81 44 888	STCU-FPA-02-01-C; logistics services	Jun 7 - Aug 7, 2013	\$17 875,52	5-day training on "TB case management in public health care facilities" for 25 general practitioners and family physicians at Sauvignon hotel, Odesa on July 1-5, 2013
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jun 25 - July 30, 2013	\$10 036,97	5-day training on "TB case detection and diagnostics by sputum smear microscopy. Quality control investigations"
NGO "Gromads'ke naukovo-medychne ob'ednannya phthisiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jun 25 - July 30, 2013	\$18 030,00	5-day training on "TB case management in primary health care facilities"

Name	Contact Information	Title	Duration	Amount (USD)	Description
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jun 19 - Aug 14, 2013	\$806,25	Organization of mentoring visits to Kryvyi Rih and Kryvyi Rih rayon
Panagora Group	Elizabeth A. Bassan, (202) 460-3025	AID-121-TO-12-00001_PanagoraGroup_02	Jul 1 - Sep 25, 2013	\$28 660,00	Finalization of a strategy summarizing the vision, audience, services, website components, launch and outreach strategy, and considerations for possible host organizations for the TIRC and develop the terms of reference for an IT design company to build the TIRC website.
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	N/A	Jul 5 - Jul 30, 2013	\$19 717,12	5-day training on "MDR TB case management"
Hotel Management Group, LLC	Kseniya Havrysh +38 067 234 0753	STCU-FPA-03-C; logistics services	Jul 08 -- Jul 31, 2013	\$1 251,79	1-day work planning preparation workshop at the Ramada Encore hotel Kyiv on July 9, 2013
PE Tetyana Bugaenko	Tetyana Bugaenko +38 050 544 33 22	STCU-FPA-04-C; logistics services	Jul 22 -- Aug22, 2013	\$1 498,40	1-day seminar "Cohort analysis of susceptible and multi-drug resistant cases of TB in accordance with international recommendations at region level" in Zaporizzhia on July 29, 2013 for 50 participants
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	STCU-FPA-05-C; logistics services	Jul 19 -- Aug19, 2013	\$20 574,71	5-day training on "TB case management for primary health care facilities" for 28 participants on July 22-26, 2013 in Dnipropetrovsk.
LLC "Hotel COMPLEX "RUS"	Nataliya Kostenko +38 067 434 00 10	STCU-FPA-06-C; logistics services	Jul 23 -- Aug23, 2013	\$5 233,01	3-day workshop on planning the Project's operations for the Year 2 at Rus hotel on July 24-26, 2013

Name	Contact Information	Title	Duration	Amount (USD)	Description
PE Natalia Kazanikova	Tatyana Velyka +38 096 81 44 888	STCU-FPA-08-C; logistics services	Aug 13 – Sep 13, 2013	\$3 620,59	2-day seminar for 31 people (29 TB doctors and 2 trainers) on "Patient counseling and testing for HIV initiated by TB service healthcare providers and effective referral" at Tavria hotel, Simferopol on Aug 14-15, 2013
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	STCU-FPA-09-C; logistics services	Aug 16 – Sep 16, 2013	\$9 368,07	5-day training on "TB case detection and diagnostics by sputum smear microscopy" for 13 participants on Aug 19-23, 2013 in Dnipropetrovsk
PE Andriy Sokolyansky	Alina Bryl +38 050 419 89 96	STCU-FPA-10-C; logistics services	Sep 3- Oct 3, 2013	\$4 312,66	2-day study tour to Donetsk and Luhansk oblasts on "Implementation of WHO recommended approaches to TB Control" for 14 people (10 participants + 4 facilitators) on Sep 4-5, 2013
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	STCU-FPA-11-C; logistics services	Sep 9 - Sep 30, 2013	\$9 704,19	5-day training "Detection and Diagnosis of Tuberculosis Using Smear Sputum Microscopy" held on Sep 9-13, 2013 for 14 people (14 participants and 2 trainers)
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	STCU-FPA-12-C; logistics services	Sep 16 - Oct 15, 2013	\$13 476,97	5-day training "Tuberculosis case management for primary health care facilities" held in the Dnipropetrovsk Center of Excellence on Sep 16-20, 2013 for 21 people (21 participants and 2 trainers)
NGO "Gromads'ke naukovo-medychne ob'ednannya phitsiatriv"	Mykhaylo Brodskyy +38 050 32 055 21	STCU-FPA-13-C; logistics services	Sep 19 - Oct 19, 2013	\$12 578,33	5-day training "Tuberculosis Case Management for Primary Health Care Facilities" held in the Dnipropetrovsk Center of Excellence on Sep 23-27, 2013 for 19 people (19 participants and 2 trainers)