



SIAPS Central Asia End of Project Report

April 2017



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SIAPS 
Systems for Improved Access
to Pharmaceuticals and Services

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The SIAPS logo consists of the word "SIAPS" in a bold, green, sans-serif font. To the right of the text is a stylized blue graphic of a person with arms raised, similar to the USAID seal.

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About SIAPS

The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to ensure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

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ACRONYMS

DM	drug management
EWS	early warning system
LMIS	logistics management information system
MDR-TB	multidrug-resistant tuberculosis
MOH	Ministry of Health
NTP	National TB Program
PHC	primary health care
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOP	standard operating procedure
TBPMWG	TB Pharmaceutical Management Working Group
TB	tuberculosis
USAID	US Agency for International Development
USG	United States Government
WHO	World Health Organization

BACKGROUND

Tuberculosis (TB) continues to be a critical public health threat in Central Asia. In addition to a high incidence of TB, Uzbekistan, Tajikistan, and Turkmenistan also experience alarmingly high rates of multidrug-resistant TB (MDR-TB). Uzbekistan and Tajikistan are included in the World Health Organization’s (WHO) lists of high burden countries for 2016–2020 for TB, TB/HIV, and MDR-TB.

Table 1. Epidemiology of MDR-TB in Central Asia

Country	MDR-TB Rate in New Cases	MDR-TB Rate in Retreatment Cases
Uzbekistan	24%	63%
Tajikistan	14%	77%
Turkmenistan	14%*	38%*

Data from Global Tuberculosis Control, WHO, WHO/HTM/TB/2016.13

* 2015 data

The high MDR-TB rates in these countries likely result from a number of underlying causes, including improper prescribing practices, misuse of medicines, and inadequate quantification and supply planning, and lead to stock-outs of TB medicines. Decision making and managerial interventions aimed at overcoming these challenges are limited by a lack of reliable data, which is often due to weak information systems.

Building on a rich history of US Agency for International Development (USAID) achievements, the USAID-funded Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program aims to improve access to quality pharmaceutical products and services through systems strengthening for lasting positive health outcomes. The SIAPS objective is to strengthen the management of essential medicines and health supplies so that more people can access the health care they need. SIAPS takes a comprehensive approach to improving pharmaceutical systems. The program not only enhances countries’ capacity to procure and distribute high-quality medicines and health technologies but also works with local partners to develop strong systems for health financing, human resources, governance, information, service delivery, and pharmacovigilance, thereby promoting local ownership of a wide range of initiatives and fostering stronger, more sustainable health systems.

The primary goal of the SIAPS TB Core portfolio is to ensure the availability of quality pharmaceutical products and support the implementation of effective pharmaceutical services for achieving global and United States Government (USG) TB program targets represented in the USG health goals, namely protecting communities against infectious diseases, fostering an AIDS-free generation, and strengthening health systems. SIAPS builds on many years of experience, methodologies, and tools developed and tested by Management Sciences for Health and its USAID-funded programs. As a result, SIAPS has at its disposal an array of instruments to address TB pharmaceutical management gaps within the health system.

The four key SIAPS objectives employed by the TB Central Asia Portfolio are: 1) strengthened pharmaceutical governance for TB at the global and country levels; 2) increased capacity for TB pharmaceutical supply management and services; 3) improved use of information for decision making in TB control; and 4) improved pharmaceutical services and access to TB products to achieve goals.

SIAPS interventions are in line with the USG Global TB Strategy (2015–2019). Specifically, SIAPS/Central Asia contributes to Objective 3, part C of the USG Global TB Strategy aimed at developing “reliable procurement and distribution systems for all essential TB medicines and supplies, and ensure that systems provide TB medicines and supplies reliably to all relevant health facilities.” Strengthening systems to ensure availability and accessibility to TB medicines also contributes to achieving universal health care goals and responds to the Ending Preventable Child and Maternal Deaths’ call for a strategic shift to “reach the most underserved populations.”

Funding for SIAPS activities in the Central Asia portfolio for FY13–FY16 totaled USD 1,638,418, including USD 1,119,600 earmarked for activities in Uzbekistan (table 2).

Table 2: SIAPS Central Asia Funding by Year and Country

Total Funding FY13–FY15 (USD)		
428,918	Tajikistan	
89,900	Turkmenistan	TB
819,600	Uzbekistan	
Funding for FY16 (USD)		
300,000	Uzbekistan	TB

KEY INTERVENTIONS

Strengthening Pharmaceutical Sector Governance

In Uzbekistan, SIAPS facilitated the creation of the Ministry of Health (MOH) TB Pharmaceutical Management Working Group (TBPMWG), which included representatives from the MOH, National TB Program (NTP), Drug Regulatory Authority, and Republican Directly Observed Treatment, Short-course Center. The working group was established to ensure sustained improvements in TB pharmaceutical management and is guided by results from a comprehensive, indicator-based assessment of the TB pharmaceutical management system. The TBPMWG, with technical assistance from SIAPS, conducted a comprehensive, indicator-based assessment of Uzbekistan's TB pharmaceutical management system in 2014. The TBPMWG was involved in designing the assessment methodology, developing the assessment protocol, training data collectors, and collecting and analyzing the data. The assessment helped to gather evidence to support the development of strategic approaches for strengthening the country's TB pharmaceutical management system. Beyond the initial assessment, the TBPMWG has continued to operate in Uzbekistan to support the nationwide scale up of QuanTB to improve TB program management. The TBPMWG developed pharmaceutical management guidelines and standard operating procedures (SOPs) for organizing the reporting, collecting, and processing of QuanTB data.

Strengthening TB Medicine Supply Chain Systems

The indicator-based assessment of TB pharmaceutical management systems in Uzbekistan and Tajikistan revealed a number of problems, including stock-outs of medicines at all levels of the health system. Interviews with medical personnel indicated that the stock-outs were caused by mistakes in quantification and delays in medicine delivery. To address the identified weaknesses and gap, SIAPS facilitated a process of selecting priority interventions to strengthen the supply chain system for TB medicines.

Improved Supply Planning with QuanTB

QuanTB, an early warning system (EWS), was implemented in Uzbekistan and Tajikistan and has prompted stakeholders to make decisions on quantification, ordering, and responding to potential problems with the supply of TB medicines. After successful pilots, the system was rolled out countrywide in both Uzbekistan and Tajikistan. QuanTB was piloted as an early warning and quantification system in four regions of Uzbekistan in 2015. By the end of that year, USAID/Uzbekistan requested that SIAPS support the NTP in scaling up QuanTB and drafting national guidelines on pharmaceutical management, which would include guidance on the use of QuanTB. Efforts to scale up to 10 regions began in January 2016, and in February, the MOH accepted the NTP's request to require that QuanTB be used for reporting from the regions to the central level, which was a prerequisite for system's nationwide rollout. QuanTB is currently used in all 14 oblasts in Uzbekistan. SIAPS provided trainings at the regional and central levels and was part of the team providing supervision visits to the regions. QuanTB has been implemented

at the oblast (regional) level in Uzbekistan, where TB medicine storage and distribution is done from the oblast warehouses to TB facilities in districts. The central level has no TB medicine stock at the central warehouse for the country. After clearing customs, appropriate quantities of TB medicines from the country order are distributed to the oblast warehouses.

In Tajikistan, QuanTB has been implemented at the oblast level in all four regions and in the capital city, Dushanbe. Information for QuanTB's early warning and quantification system is collected quarterly throughout the country. Quantification with QuanTB for supply planning purposes is then done at the central level of the NTP. Information from QuanTB has been used in quarterly reports since the system was installed. These reports are used to create, update, and revise supply plans for TB medicines and their quantification. SIAPS supported QuanTB's manager and the pharmaceutical management coordinator of the NTP in the review process. Project HOPE, the principal recipient of the Global Fund TB grant, and the KNCV Tajikistan Branch implementing USAID-funded TB programs took over support of QuanTB after SIAPS closed in Tajikistan.

Built Capacity for the Consistent and Efficient Use of a Logistics Management Information Systems

Uzbekistan and Tajikistan each had a well-designed, paper-based logistics management information system (LMIS), but assessments showed that LMIS requirements are not always followed, and use of the system's data output varies by facility. A major factor contributing to poor LMIS data use is the lack of training for TB pharmaceutical management staff. To increase staff's capacity, SIAPS provided technical assistance by developing training curricula, training local trainers, and conducting countrywide trainings for staff involved in TB pharmaceutical management. SIAPS assisted the NTP in optimizing the use of existing paper-based reporting and developed an automated tool to monitor and manage LMIS reporting in the electronic system, which is designed to receive and automatically aggregate quarterly LMIS reports on consumption and stock levels of medicines. The system ensured that reports were submitted on time, improved their accuracy, and dramatically reduced the time needed to aggregate the data received from facilities. This was important for improving the supply planning of TB medicines within the country and minimizing medicine stock-outs or overstocks. SIAPS further modified the LMIS tool to add functionality that would allow stock data to be distributed by expiration dates of the batches and make data importable to QuanTB. The new version of the LMIS has been piloted in six districts.

Developed Capacity to Use Strategic Information for Decision Making

SIAPS provided technical assistance to the NTPs of Tajikistan and Uzbekistan to address gaps in using data effectively for supply planning decisions. SIAPS developed an automated tool that aggregates medicine consumption and stock level reports from TB facilities. This allows NTPs to monitor metrics (reporting rates, average monthly consumption) and manage stock levels, which will minimize expiries and stock-outs of TB medicines. In Turkmenistan, SIAPS attempted to implement e-TB Manager with the NTP and WHO. e-TB Manager was first introduced in Turkmenistan in 2013 upon request from WHO's European regional office to assist the core TB Center team in managing the center's TB reporting and statistics. Previously, the TB Center used

paper reporting and lacked any electronic system for TB data. After receiving the request, the USAID Mission in Central Asia awarded SIAPS funding to implement e-TB Manager in Turkmenistan. In collaboration with WHO Europe, SIAPS introduced e-TB Manager to the TB Center, which functions as the NTP, and other stakeholders in February 2013. SIAPS was primarily responsible for the technical component of the project, and WHO was responsible for overall coordination and capacity development activities. The TB Center supported the idea of piloting e-TB Manager and recommended the Ashgabat and Mary regions as pilot sites due to their well-developed infrastructure and central location.

An action plan was developed for the implementation of the e-TB Manager pilot, and a technical working group comprising representatives from WHO, SIAPS, and the TB Center was created. Despite support from the TB Center, SIAPS and WHO were not able to meet with decision makers from the MOH, so a letter was drafted to the MOH requesting support in the implementation of e-TB Manager. USAID, through WHO, was the sole source of financial support for the pilot, including procuring 14 computers and a server, providing an internet connection, hiring an IT consultant, and covering training costs.

Due to long bureaucratic procedures and strong concerns over data and privacy, a year after initially presenting e-TB Manager to the TB Center, SIAPS returned to begin the implementation process. SIAPS adapted standard training materials to the country context, and the initial customization of the system was completed. In February 2014, SIAPS led a two-day training for 22 participants in collaboration with WHO and provided technical assistance in setting up an administrative module in e-TB Manager.

Despite having an agreement with the TB Center, training local staff, procuring equipment, and hiring an IT consultant, the e-TB Manager pilot stopped in 2014 due to continuing concerns over data privacy. The MOH provided an official communication in June 2015 stating that it would like to develop its own electronic system and would no longer adopt e-TB Manager. The lessons learned from the e-TB Manager implementation in Turkmenistan highlight the importance of country ownership, getting agreement from top decision makers in the MOH, and doing a thorough feasibility assessment for the country. After several months of bureaucratic delays and addressing privacy concerns, we should have had a direct conversation with partners about why it was not feasible to pilot e-TB Manager in Turkmenistan.

Strengthening the Provision of NTP Pharmaceutical Services

The 2014 countrywide indicator-based assessment of the TB pharmaceutical management system in Uzbekistan, which was conducted by the TBPMWG, also revealed problems in the rational use of TB medicines. In 16% of cases, first-line treatment did not conform to standard treatment guidelines, while in 46% of cases, second-line regimens used for the treatment of MDR-TB differed from what was prescribed by MDR-TB committees. Noncompliance to the recommended treatment regimens contributes to poor treatment outcomes and the ongoing development and transmission of MDR-TB. SIAPS supported the NTP in piloting a Drug Use Review (DUR) system for assessing and improving prescribing practices. The DUR is a quality assurance intervention that systematically identifies and remedies problems related to medicine use by collecting, analyzing, and interpreting data through criteria-based reviews.

Capacity Development for the Pharmaceutical Management of TB

To ensure that Tajikistan's TB medical personnel are adequately and continuously trained on TB pharmaceutical management, SIAPS provided technical assistance to develop a training curriculum as part of the general post-diploma education of TB doctors and nurses. The curriculum was reviewed by the NTP and has been submitted to Tajikistan's MOH for approval. SIAPS also provided on-the-job training and remote support to the NTP's pharmaceutical manager on pharmaceutical management tasks. SIAPS supported the NTP to develop a TB pharmaceutical management manual that was reviewed and agreed upon by national counterparts and translated into Tajik.

In Turkmenistan, SIAPS trained staff from TB facilities in two regions on the use of e-TB Manager. In Uzbekistan, detailed instructions on QuanTB data collection, entry, and analysis; report generation; and monitoring of QuanTB use have been developed and are being implemented. Six central- and 28 oblast-level staff have been trained in QuanTB v4. In addition, SIAPS has been supporting monthly supervision visits to ensure QuanTB roll out monitoring and provide on-the-job training.

KEY ACHIEVEMENTS

Strengthening Pharmaceutical Sector Governance

SIAPS promoted the creation of the TBPMWG by the MOH and collaborates closely with the group in Uzbekistan. The TBPMWG became the primary national partner for SIAPS in the country while conducting several activities, including an indicator-based assessment of the TB pharmaceutical management system and the implementation of QuanTB. The assessment contributed to the development of Uzbekistan's National TB Control Strategy (2016–2020) and increased the working group's capacity to conduct similar national assessments.

Strengthening TB Medicines Supply Chain Systems

SIAPS supported the nationwide scale up of QuanTB to improve TB program and supply chain management in Tajikistan and Uzbekistan. Early warning and quantification systems were piloted successfully and rolled out nationwide in both countries. In Tajikistan, the system is fully functional and NTPs can anticipate supply problems for TB medicines and take remedial action to avoid stock-outs or expiries. Since QuanTB was installed in Tajikistan, its information has been used in the NTP's quarterly reports. QuanTB forecasts and supply plans are reviewed quarterly to adjust for updated enrolled patient numbers, stock on hand, and expiry dates. SIAPS also assisted with conducting actual forecasting and supply planning of TB and related medicines. The tool also helps review trends in actual enrollment of TB cases so that necessary steps can be taken to minimize the risk of stock-outs or overstock of certain medicines when the number of TB cases changes. In late 2014 and early 2015, after a six-month QuanTB pilot, the NTP quantified second-line medicines for the entire country using QuanTB by considering the quantities (i.e., stock on hand and stock on order) of the three partner organizations that procured TB medicines for three patient cohorts at that time. Quantification of second-line medicines for the entire country is done quarterly using QuanTB and is based on information reported from the regions. QuanTB is also used for quarterly ordering at the regional level. QuanTB has improved the projection of expected TB cases by comparing the actual number of enrolled cases with expected cases for each quarter.

SIAPS capacitated the NTP to implement the QuanTB EWS and use it to monitor TB stock status. The support included reviewing and analyzing QuanTB outputs and using QuanTB dashboard alerts to propose corrective actions. The implementation of QuanTB and TB stock status monitoring activities informed several TB supply chain decisions and was used to monitor TB program performance and take corrective actions to mitigate stock-outs, such as alerting the Global Drug Facility when stock reaches a critical level. Actions to prevent wastage and expiration were also initiated. For example, by monitoring stock levels and impending expiries based on the quantification done using QuanTB in 2015 and by considering information from partners that procure second-line medicines, the country identified the risk of a significant overstock that could lead to wastage due to expiry before full consumption. Remedial action was taken by coordinating the supply planning of the NTP and its partners and collaboration with the Global Drug Facility to supply products with longer expiry dates, revise or cancel pending orders

for some items, or redistribute stock to other countries. The measures resulted in savings from the prevented expiry and wastage of medicines of approximately USD 1,165,000.¹

SIAPS provided technical assistance to enhance the country's TB medicine quantification capacity and skills. Two trainings on quantification using QuanTB were conducted in 2014 and 2015, and nine key staff were trained. SIAPS also provided technical assistance and on-the-job training to the national drug management (DM) coordinator on QuanTB and different aspects of TB pharmaceutical management. As a result, the NTP, the national DM coordinator, and her assistant are trained on the use of QuanTB and general forecasting/quantification of TB medicines and are able to coordinate all related TB pharmaceutical management activities, including forecasting and procurement. This is a significant improvement compared to when the NTP struggled to effectively manage the TB program and collaborate with partners.

In 2015, in response to another Tajikistan NTP request, SIAPS developed the very simple pharmaceutical management information system (VSPMIS)—a downloadable desktop e-LMIS that consolidates and analyzes logistics data, monitors metrics such as reporting rates and average monthly consumption, and manages stock levels to minimize expiries and stock-outs. The tool was piloted for six months in selected oblasts. An accompanying user guide/job aid was developed, and the system was adjusted and customized to NTP requirements during the pilot phase. At the time of a 2016 SIAPS evaluation in Tajikistan, there were plans to implement the tool in six districts in the country where staff had already been trained with assistance from SIAPS. Partner organizations were expected to collaborate and support the NTP to roll out the system by providing IT equipment and internet access for pilot sites at the regional and district levels and then countrywide. Staff at the TB facilities were trained in LMIS recording and reporting and some were also trained in e-LMIS reporting (in the regions where the VSPMIS would be piloted), which has led to improved inventory reporting. SIAPS developed training material for the TB LMIS in country and facilitated trainings for TB network staff responsible for TB LMIS recording and reporting, resulting in improved inventory reporting. SIAPS collaborated with and supported the NTP's national DM coordinator in conducting supportive supervision visits to regions that needed help to improve data quality for QuanTB use. There was a functioning system for patient-related data recording and reporting, which is necessary for TB medicine forecasting. However, as mentioned above, there were some gaps in reporting related to the lack of incentives for regional DM staff to prioritize DM work.

All 34 of Uzbekistan's TB facility staff members (6 at the central and 28 at the oblast levels) responsible for medicines management were trained on the LMIS. The comparison of results of the pre- and post-tests of the trainees showed significant improvement in their knowledge and skills. Feedback from the NTP's supportive supervisory teams has also been very positive, with health professionals detailing how the knowledge acquired during the training is used daily in TB facilities.

During project year five, SIAPS assisted the NTP in optimizing reporting and developed an automated tool to monitor and manage the LMIS. The e-LMIS is designed to receive and automatically aggregate quarterly LMIS reports on consumption and stock levels. The system helps ensure that reports are being submitted on time, improves their accuracy, and reduces the

¹ <http://siapsprogram.org/publication/altview/implementing-quantb-to-improve-forecasting-supply-planning-and-early-warning-systems-for-tb-medicines-tajikistan-report/english/>

time needed to aggregate data received from facilities. In addition, transitioning to an electronic system is important for improving supply planning of TB medicines and minimizing stock-outs or expired medicines. SIAPS worked closely with the NTP to customize the LMIS, which includes a feature that allows stock data to be exported to QuanTB. The new version of the LMIS has been piloted in six districts.

Regular quantifications and the EWS feature of QuanTB were used to make decisions about when and what quantities to order for the regional and district levels. This approach has significantly improved the supply of TB medicines in the country.

From June to December 2016, the proportion of oblast warehouses in Uzbekistan with at least one TB medicine stock-out decreased by 60%, from 6 out of 10 oblast warehouses at the baseline to none in December 2016, and the proportion of district TB facilities within each oblast with at least one TB medicine stock-out decreased by 32% on average (range: 0% to 83%) across oblasts.

Strengthening Pharmaceutical Services of the NTP

The DUR was initially piloted in three facilities in Tashkent, Uzbekistan. Between June 2016 and February 2017, DURs were conducted in all 14 oblasts in Uzbekistan. The TBPMWG has the ability to collect DUR data, generate reports, and plan actions to solve identified problems. Data from the DUR revealed weakness and gaps in the rational use of TB medicines in these facilities, including:

- Noncompliance with the recommended second-line treatment regimens
- Inadequate monitoring of second-line treatment due to lack of access to clinical laboratories
- Inadequate management of adverse events
- Poor coordination between the MDR-TB committee and the TB pharmaceutical management team

During the DUR knowledge exchange workshop in Tashkent, Uzbekistan, April 5–6, 2017, TB facility staff expressed a desire to implement a regular DUR program as it helped them assess the current status of the rational use of TB medicines within their facility and plan interventions. An improvement plan outline, including educational and operational interventions, was developed. The first round of DUR data will serve as a baseline for the NTP to improve TB treatment and care in the country.

Capacity Development for TB Pharmaceutical Management

SIAPS provided technical assistance to the NTP of Tajikistan in different aspects of TB pharmaceutical management, including capacity development. SIAPS worked with national counterparts to plan the pharmaceutical management curriculum reform for post-diploma education of TB specialists and nurses. It was agreed that six of the required 156 hours of in-

service training over five years for TB doctors and nurses will be dedicated to TB pharmaceutical management. As a result of SIAPS's efforts, pharmaceutical management will become a routine part of continuous education for TB doctors and nurses.

In Uzbekistan, six specialists were trained at the central level and have the ability to conduct QuanTB data collection and entry, report generation, QuanTB use monitoring, and on-the-job training. In addition, up to two specialists have been trained in QuanTB (versions 3 and 4) use in each oblast. Written instructions (adapted to the Uzbekistan setting) on patient and stock-related data collection and QuanTB use are available in Russian.

LESSONS LEARNED

Strong relationships with in-country partners are key, particularly in countries without an in-country SIAPS technical advisor or SIAPS office to leverage resources and coordinate support to the MOH. Involving local colleagues at all stages of program implementation was critical for success, as they worked with SIAPS on planning, preparation, implementation, and monitoring of activities. This ensured ownership among national partners and helped develop their capacity. During this work, the head of the TBPMWG in Uzbekistan and the NTP pharmaceutical manager in Tajikistan became champions, led the activities, and advocated for strengthening TB pharmaceutical management systems in their countries. For the best coordination, collaboration, and results, TB partners that are supporting the implementation of QuanTB should consider embedding in-country field advisors within the NTP. Regular monitoring of TB stock levels against patient enrollment is vital to ensuring the early identification of potential wastage or stock-outs of TB medicines. Capacity-building refresher trainings on QuanTB and on improving data quality and reporting are needed on an ongoing basis to help address human resource issues and the adverse impact of ongoing staff attrition.

Introducing web-based tools, such as e-TB Manager, does not guarantee that they will be implemented successfully. In Turkmenistan, although the NTP expressed its commitment to piloting and implementing e-TB Manager, there was very little commitment due to data privacy concerns. This was despite the system being customized for the country, users having been trained, and WHO having developed an infrastructure for implementation. In the future, a more thorough assessment of readiness and real commitment from national partners to implement a web-based tool are needed.

SUSTAINABILITY

To ensure sustainability, the SIAPS/Central Asia approach includes the involvement of national stakeholders at all stages of the interventions, including planning, implementation, monitoring, and evaluation. This has contributed to the successful implementation of the interventions and to developing capacity at the national and facility levels. National staff and health service providers have been given appropriate processes and tools. National-level staff are able to perform complex TB pharmaceutical management tasks, including forecasting and quantification of medicines, implementing DUR programs, conducting indicator-based assessments, and utilizing data for decision making. As a result of the SIAPS interventions, the TBPMWG will continue working in Uzbekistan and is ready to address ongoing and strategic challenges. The Tajikistan NTP pharmaceutical manager can now manage and coordinate the pharmaceutical management activities of stakeholders in the country.

Beginning in mid-2017, the Uzbekistan MOH began implementing health reforms, including reforms in TB pharmaceutical management. The NTP wants to pilot QuanTB in district-level TB facilities in the Republic of Karakalpakstan. Because of this, the NTP was not ready to finalize the National TB Pharmaceutical Management guideline. Instead, the NTP decided to prepare an amendment to ministerial order #383 (an MOH Universal Order that is a legal document about access to diagnosis and treatment for TB, including drug-resistant TB, in Uzbekistan) to endorse the use of QuanTB for TB medicine quantification and supply planning at all levels. Updated instructions on QuanTB data collection, reporting, and monitoring that were developed with support from SIAPS will serve as a basis for the amendment.

The Uzbekistan and Tajikistan NTPs are the owners of their EWSs and are managing those systems on a daily basis. The TB pharmaceutical management curriculum will formally become in-service training for all TB doctors and nurses in Tajikistan. SIAPS continues to work with other international partners (e.g., Project Hope, KNCV, WHO, the Global Fund) on TB control in the countries to ensure that all work is coordinated and supports national stakeholders to ensure the sustainability of the achievements. The central level still needs to conduct regular supervision visits and on-the-job training for several regions to increase capacity and skills to ensure the availability of valid and reliable data for adequate implementation of the EWS. The Uzbekistan NTP wants to continue at least quarterly QuanTB monitoring in each oblast by the central-level team for at least one more year. Finally, Project HOPE will support the NTP in only six regions through September 2017, and a work plan has been approved. For the remaining eight oblasts, the NTP wants to request support from the Global Fund and the USAID country office.

THE FUTURE OF PHARMACEUTICAL SYSTEMS STRENGTHENING

The TBPMWG has been created and is fully operational. QuanTB has been fully implemented in all 14 oblasts in Uzbekistan, and central- and oblast-level TB pharmaceutical management staff have been trained in QuanTB data collection, use, reporting, and monitoring. However, QuanTB cannot solve all medicine supply problems, and the Uzbekistan NTP needs to ensure that other elements of TB pharmaceutical management are in place and strengthened.

Coordination among the central, oblast, and district levels to ensure optimal stock levels, including the coordinated redistribution of TB medicines among oblasts and or among districts within the oblasts, to prevent stock-outs and expiries of TB medicines is still a challenge. Despite QuanTB alerts, stock-outs are still being observed at all levels due to an inadequate TB medicine distribution system. Despite increasing capacity and monitoring of stock status, in four of the 12 oblasts in Uzbekistan, more than 50% of district TB facilities experienced at least one TB medicine stock-out between June and December 2016. Although stock-outs of medicines occurred in district TB facilities, the needed quantities of TB medicines were available at all four oblast warehouses.

The QuanTB knowledge exchange workshop in Tashkent, Uzbekistan, in March 2017 indicated a need to:

- **Strengthen the TB medicine distribution system** from oblast warehouses to the TB facilities in districts. There is a lack of SOPs that describes action points necessary to respond to QuanTB warnings about potential and/or actual stock-outs and potential expiries of TB medicines in the oblast.
- **Define minimum and maximum stock levels** of TB medicines in district TB facilities and primary health care (PHC) facilities.
- **Improve TB medicine storage conditions** in most district-level TB facilities to improve the current limited storage space and inadequate storage conditions.
- **Improve communication between the PHC** facility responsible for TB medicine administration to TB patients and district TB facilities to properly maintain TB medicine inventory and precisely estimate TB medicine stock levels in the country throughout the supply chain continuum.
- **Conduct quarterly monitoring visits** to ensure QuanTB data quality in all oblasts. Although the oblast levels can use QuanTB and report and respond to the EWS, oblast-level staff would benefit from monitoring and on-the-job training from central-level experts. There is high staff turnover at the oblast level, and routine tasks and activities have better outcomes when there is a regular monitoring in place.

The DUR knowledge exchange workshop in Tashkent, Uzbekistan, in April 2017 indicated a need to:

- **Implement routine DURs and a pharmacovigilance system in the country** because the NTP, with support from *Medecins sans Frontiers*, has introduced short treatment regimens.
- **Improve the clinical laboratory capacity of specialized TB facilities at all levels.** Clinical laboratory capacity strengthening is expected to improve timely detection and monitoring of adverse events.
- **Improve coordination between oblast MDR-TB committees and pharmaceutical management teams.** The number of patients enrolled in second-line treatment and the second-line treatment regimens prescribed by MDR-TB committees at the central and oblast levels should be communicated in real time, with the relevant TB pharmaceutical management group responsible for data collection in QuanTB. QuanTB warnings about overstock, expiry, and potential and actual stock-outs of TB medicines should also be shared with the MDR-TB committee, and potential causes should be identified. Training and SOPs describing the data flow between the MDR-TB committee and the TB pharmaceutical management team need to be developed and endorsed. Central- and oblast-level MDR-TB committees need to carefully and strictly monitor doctors' compliance and patients' adherence to the recommended treatment regimens. Through regular reporting of patient-related data, it is feasible to monitor compliance and adherence to treatment regimens.

To further strengthen TB pharmaceutical management systems in Uzbekistan, existing TB pharmaceutical management policies and practices need to be revised, including:

- Improving coordination among the TBPMWG and oblast and district TB facilities
- Finalizing and endorsing the national TB pharmaceutical management guideline
- Continuing to improve TB medicine storage conditions in oblast warehouses, district TB facilities, and PHC facilities
- Setting minimum and maximum stock levels of TB medicines at all levels of TB services in the country
- Continued monitoring and on-the-job training of oblast- and district-level pharmaceutical management staff to ensure quality-assured data collection and the proper use of QuanTB
- Developing an SOP for regular and emergency orders
- Implementing the DUR and pharmacovigilance systems