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# **Implementing QuanTB to Improve Forecasting, Supply Planning, and Early Warning Systems for TB Medicines: Philippines Report**

**August 2016**



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August 2016





This report is made possible by the generous support of the American people through the US Agency for International Development (USAID), under the terms of cooperative agreement number AID-OAA-A-11-00021. The contents are the responsibility of Management Sciences for Health and do not necessarily reflect the views of USAID or the United States Government.

## **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.

## **Recommended Citation**

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Goredema, Wonder, P.C. Mangao and I. Linatoc. 2016. *Implementing QuanTB to Improve Forecasting, Supply Planning, and Early Warning Systems for TB Medicines: Philippines Report*. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

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## ACRONYMS

|         |  |
|---------|--|
| DOH     | Department of Health   |
| DSM     | drug supply management   |
| EWS     | early warning system   |
| FDA     | Food and Drug Administration   |
| GDF     | Global Drug Facility   |
| IMPACT  | Innovations and Multi-sectoral Partnerships to Achieve Control of Tuberculosis |
| LCP     | Lung Center of the Philippines   |
| LMD     | Logistics Management Division  |
| NTP     | National TB Control Program  |
| NTRL    | National TB Reference Laboratory   |
| PBSP    | Philippines Business for Social Progress                                       |
| PD      | Pharmaceutical Division  |
| SIAPS   | Systems for Improved Access to Pharmaceuticals and Services                    |
| subTWG  | sub Technical Working Group  |
| TASC    | Technical Assistance Supporting Countries                                      |
| TB      | tuberculosis   |
| USAID   | US Agency for International Development  |
| USP PQM | US Pharmacopoeia Promoting Quality of Medicines                                |

## ACKNOWLEDGMENTS

The Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program would like to express appreciation to the National TB Control Program (NTP) for its cooperation and commitment in strengthening the forecasting, supply planning, and early warning systems in Philippines. Gratitude also goes to other Department of Health (DOH) stakeholders, including the National TB Reference Laboratory (NTRL), Food and Drug Administration (FDA), Logistics Management Division (LMD), Pharmaceutical Division (PD), and Lung Center of the Philippines (LCP), as well as the Philippines Business for Social Progress (PBSP), Innovations and Multi-sectoral Partnerships to Achieve Control of Tuberculosis (IMPACT), Technical Assistance Supporting Countries (TASC), and US Pharmacopoeia Promoting Quality of Medicines (USP PQM) for their contributions and continued support in the implementation of the intervention.

In particular, we would like to acknowledge Dr. Anna Marie Celina Garfin, Dr. Mary Rosary Taguinod-Santiago, Dr. Ruth Orillaza-Chi, Mr. Arnyl Araneta, Mr. Armando Castillo, Mr. Jover Francisco, and Ms. Marie Kristine Padilla, who provided their inputs and perspectives as valuable beneficiaries of the QuanTB tool and early warning system (EWS), and SIAPS for its technical assistance.





## INTRODUCTION

This report summarizes the information gathered as part of a review of the implementation of QuanTB and related technical assistance to strengthen TB pharmaceutical management in Philippines.

### Background

TB is a preventable and curable infectious disease that ranks alongside HIV/AIDS as a leading cause of death worldwide. If untreated, the disease can be debilitating and can kill approximately 50% of those infected. Proper forecasting, supply planning, and stock monitoring are key to ensuring an uninterrupted supply of TB commodities to meet the evolving needs of TB programs as treatment is scaled up and treatment regimens change. The USAID-funded SIAPS Program has provided technical assistance to National TB Control Programs (NTPs) in 12 USAID-focus countries since 2013. SIAPS regional or in-country technical advisors have collaborated with NTPs to address challenges that hamper uninterrupted access to TB medicines, such as the lack of reliable information for effective decision making in TB supply chain management, an EWS to prevent stock-outs or expiries, and supply chain system monitoring mechanisms, as well as limited institutional and human resource capacity in these areas. The support included the use of QuanTB—an electronic forecasting tool and EWS that transforms complicated calculations into a user-friendly dashboard that displays key quantification and supply planning information and alerts on risks of stock-outs or expiries. Implementation of the tool was complemented by other SIAPS TB technical assistance activities, such as quantification capacity-building training and participation in country monitoring missions.

Philippines is a lower-middle income country in South East Asia and is situated in the Western Pacific Ocean. It had a 2015 population of approximately 101 million and a life expectancy at birth of 64.9 years for males and 71.8 years for females<sup>1</sup>. In 2014, the prevalence of TB was 417 per 100,000 population, and 267,436 TB cases were reported<sup>2</sup>. The country is administratively organized into 81 provinces that are grouped into 18 regions and are further subdivided into [component cities](#) and [municipalities](#)<sup>3</sup>. In 2014, the public health expenditure comprised approximately 34.3% of the total health expenditure<sup>4</sup>. The health system is primarily funded through the government's public health budget and bilateral partnerships; UN agencies and other multilateral donors; and nongovernmental organizations, including the Centers for Disease Control, Department for International Development, European Union, Global Fund, and Japan International Cooperation Agency.<sup>5</sup>

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<sup>1</sup> World Development Indicators. Available at: <http://data.worldbank.org/indicator>.

<sup>2</sup> WHO Global TB Report Philippines Country Profile. Available at: [https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO\\_HQ\\_Reports%2FG2%2FFPROD%2FEFT%2FTCountryProfile&ISO2=PH&LAN=EN&outtype=html](https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FFPROD%2FEFT%2FTCountryProfile&ISO2=PH&LAN=EN&outtype=html).

<sup>3</sup> Wikipedia: Provinces of the Philippines. Available at: [https://en.wikipedia.org/wiki/Provinces\\_of\\_the\\_Philippines](https://en.wikipedia.org/wiki/Provinces_of_the_Philippines).

<sup>4</sup> World Development Indicators. Available at: <http://data.worldbank.org/indicator>.

<sup>5</sup> WHO. 2014. WHO country cooperation strategy Bangladesh 201–2017. Available at: [http://www.who.int/countryfocus/cooperation\\_strategy/ccs\\_ph\\_en.pdf](http://www.who.int/countryfocus/cooperation_strategy/ccs_ph_en.pdf).

### **Key Gaps that Necessitated QuanTB Implementation**

- *The lack of a simple, automated tool for forecasting and supply planning:* The country previously used an Excel-based forecasting tool. The tool tracked medicine status and was used for supply planning and as an EWS to adjust delivery schedules. However, the main challenge in using the tool was that it required the health facility to transfer and manually encode logistics data, which made the process time consuming and tedious. Data to monitor expiration and for supply planning were also manually generated, and it was not possible to present a summary for all medicines.
- *Data quality and reporting issues:* There were challenges with the quality and timeliness of reports at the health facility level. Too much data was needed, and the Excel tool required multiple pieces of information to generate the forecast, all of which had to be manually copied and entered. This subjected the process to human error and was time consuming for staff. Delays in the submission of reports from the health facilities added to the time needed for forecasting.
- *Challenges in monitoring of TB patient enrolment:* There was no good tool to review and analyze actual patient enrollment versus planned enrollment and its impact on the availability of TB medicines and related commodities.

The implementation of QuanTB is helping to address these gaps.

### **Goal and Objectives**

SIAPS conducted an evaluation of its TB technical assistance and the QuanTB implementation in Philippines. Specific objectives were to determine:

- Key achievements or results of SIAPS QuanTB technical assistance in Philippines
- Experiences and perspectives of the beneficiaries from the NTP
- Challenges and lessons learned

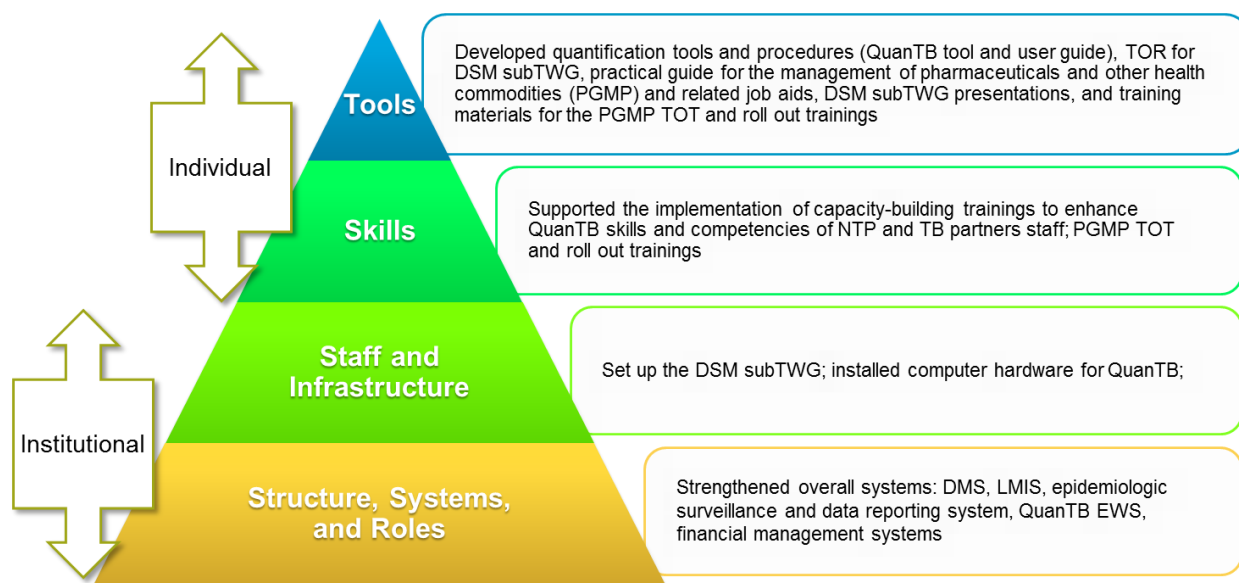
This report summarizes key aspects and results of the analysis for Philippines.

## METHODOLOGY

Data were collected through a review of relevant background documents and reports; interviews with SIAPS TB staff; remote data-collection through telecommunication with SIAPS TB field advisors (using a questionnaire for SIAPS field advisors) and with local beneficiaries of the technical assistance (using a questionnaire for active users of QuanTB). Data were analyzed by content (mostly qualitatively) and by prevalent themes around key achievement or success areas. In addition, online experience and satisfaction surveys were completed by country beneficiaries and global partners. Results of the online surveys have been reported separately<sup>6</sup>.

### Strategic Approach

SIAPS developed QuanTB to promote a systems strengthening approach to TB medicines management<sup>7</sup>. As shown in figure 1, implementation of the tool is expected to strengthen the country's quantification system through systemic institutional and individual capacity building. Optimum capacity in all levels of the hierarchy is key to ensuring the timely reporting of valid data and updating of QuanTB files, generation of accurate forecasts, and supply planning information and EWS alerts. The information informs proper decision making and the development and implementation of appropriate remedial actions through an appropriate technical working group or partner coordination forum.



<sup>6</sup> Goredema W, Sawyer K, Mwatawala S, Owuna C. 2017. *Implementing an Early Warning System for TB Medicines: Global Report*. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

<sup>7</sup> SIAPS Program. 2013. *QuanTB User's Guide*. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

**Figure 1: Systemic institutional and individual capacity building in quantification<sup>8</sup>**

Key interventions that were implemented in Philippines included:

- *Capacity building:* Key NTP and partner staff have been trained on the quantification of TB medicines using QuanTB.
- *Ongoing implementation of QuanTB in quantification and stock status monitoring and as an EWS:* The country is using QuanTB to forecast and plan supplies of TB medicines, track stock status, generate EWS alerts, and take appropriate actions to prevent or minimize risks such as overstocking and expiry of medicines.
- *Provision of technical assistance through Global Drug Facility (GDF) monitoring missions and program review:* This has strengthened quantification and the TB supply chain system.

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<sup>8</sup> *Adapted from:* Potter C, Brough R. Systemic capacity Building: A Hierarchy of needs. Health Policy and Planning 2004; 19(5): 336–345.

## RESULTS AND DISCUSSION

### Process

SIAPS has been providing TB technical assistance to Philippines since 2012. The support is provided through a designated in-country senior technical advisor for TB pharmaceutical supply management. The DOH's NTP implemented QuanTB in 2014 with technical assistance from SIAPS and in collaboration with the NTRL; other DOH stakeholders (FDA, LMD, PD, and LCP); and other local TB partners and stakeholders, including the PBSP, IMPACT, TASC, and USP PQM. At the time of this evaluation, the country was using QuanTB for forecasting, procurement, supply planning, cost analyses, the introduction of new medicines or regimens, and as an EWS. The NTP uses an Excel-based Health Facility Drug Supply Management (DSM) report<sup>9</sup>, which includes stock status, projected and actual consumption of TB medicines, and an inventory summary to collect data that are then fed into QuanTB. Each month, TB treatment centers compile and submit their monthly DSM reports to the NTP DSM coordinators at the central level. The DSM coordinators validate and consolidate all health facility data in an Excel-based consolidated National DSM Report<sup>10</sup> and use relevant raw data from the consolidated report to update QuanTB. The resulting dashboard is then checked by SIAPS and the NTP DSM team before the QuanTB output is finalized. The QuanTB information, including EWS red flag alerts, is then reported to the DSM sub Technical Working Group (subTWG) for review, discussion, and decision-making and for consensus on appropriate procurement, supply planning, and supply chain logistics actions to take to mitigate stock-related risks.

### Beneficiary Experiences and Perspectives

Respondents rated key attributes of QuanTB favorably. They consider it a simple, user-friendly, reliable, useful, fairly accurate, and cost-effective tool that has significantly improved the speed and timeliness of forecasting and supply planning and informed decision-making for TB medicine supply. They were confident that the tool readily produces accurate, valid, and reliable forecasts, supply planning, and EWS alerts for program needs. Staff and supervisors find it easy to monitor stock status by reviewing the QuanTB dashboard. Users note that QuanTB has improved their daily work by providing information on how long the current pipeline will last in terms of months of stock and EWS red flag alerts on pending expiries of medicines if they are not consumed. They also noted that the tool has improved forecasting by providing information on when to expedite procurement or fast track or delay delivery.

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<sup>9</sup> Philippines Health Facility DSM Report template

<sup>10</sup> Philippines Consolidated National DSM Report template

## **Accomplishments**

Key accomplishments and results of QuanTB implementation in Philippines included:

- *Adopted and institutionalized QuanTB:* With ongoing SIAPS technical assistance, the NTP has adopted and institutionalized QuanTB as the national quantification tool for first- and second-line TB medicines.
- *Enhanced NTP quantification capacity and skills:* With SIAPS technical assistance, the NTP successfully set up a DSM subTWG that leads the review and use of QuanTB forecasts, related pipeline and supply planning, and EWS information in procurement and supply chain logistics decision making. A capacity-building workshop was successfully conducted with 16 trainees, including members of the subTWG and staff from various NTP and partner organizations, to orient them on QuanTB and enhance their quantification capacity and skills. SIAPS supports the NTP in convening regular DSM subTWG meetings. The DSM subTWG is progressively able to update QuanTB data and generate forecasts with less and less SIAPS support. SIAPS and NTP senior staff supervise and mentor staff in forecasting and quantification using QuanTB.
- *Improved forecasting and supply planning:* QuanTB forecasts and supply plans are reviewed by the subTWG on a quarterly basis or as needed to adjust for updated enrolled patient numbers, stock on hand, and expiry dates. The results are more timely, accurate, and reliable than the quantification results before QuanTB. Quantities for procurement are easily determined, and orders are placed to ensure an uninterrupted supply of TB medicines. Implementation of the tool also helps to review trends in actual enrollment of TB cases and to take necessary steps to minimize risk of stock-outs or overstock of certain medicines when TB cases increase or decrease, particularly for multidrug-resistant TB or extensively drug-resistant TB. EWS dashboard data on potential stock-outs and expiries and on months of stock help give an overall idea of the pipeline position for all stock, and the order and costs report is used for budgeting for and ordering TB medicines and related commodities. SIAPS assists the NTP in facilitating and following up on deliveries with the Philippine Business for Social Progress (PBSP) and the GDF. SIAPS also assists the NTP in accomplishing action points identified through regular quantification output reviews and agreements reached during DSM subTWG meetings
- *Implemented an EWS to prevent stock-outs and wastage of TB medicines:* SIAPS assists the NTP in ongoing monitoring of TB stock status. This includes reviewing and analyzing QuanTB outputs and using QuanTB dashboard alerts to propose appropriate corrective actions. TB stock status monitoring has informed corrective actions to mitigate stock-outs by alerting the GDF and PBSP whenever stock reaches a critical level. Similarly, actions to prevent wastage and expiry were initiated through a review of QuanTB outputs. Specifically, in 2015, QuanTB helped inform NTP decisions to expedite some shipments of levofloxacin, kanamycin, and rifampicin to avoid stock-outs. The delivery of the medicines was arranged, and distribution of stock to health facilities was fast tracked. Regular monitoring of the availability of first- and second-line medicines informs rational supply and distribution of the medicines countrywide.

QuanTB data provided good evidence to give to the GDF to substantiate country fears on the adverse impact of stock-outs or expiry of medicines if shipments were not fast-tracked or delayed. QuanTB also enables the NTP to easily monitor medicine availability in complex multiple drug TB treatment regimens. As a result of timely decisions and actions to redistribute stock or expedite or delay GDF shipments based on QuanTB dashboard alerts, at the time of the evaluation there had been no stock-outs of first- or second-line medicines, and all medicines, including those with fewer than three months of stock remaining, had been delivered on time to avoid stock-outs<sup>11,12</sup>.

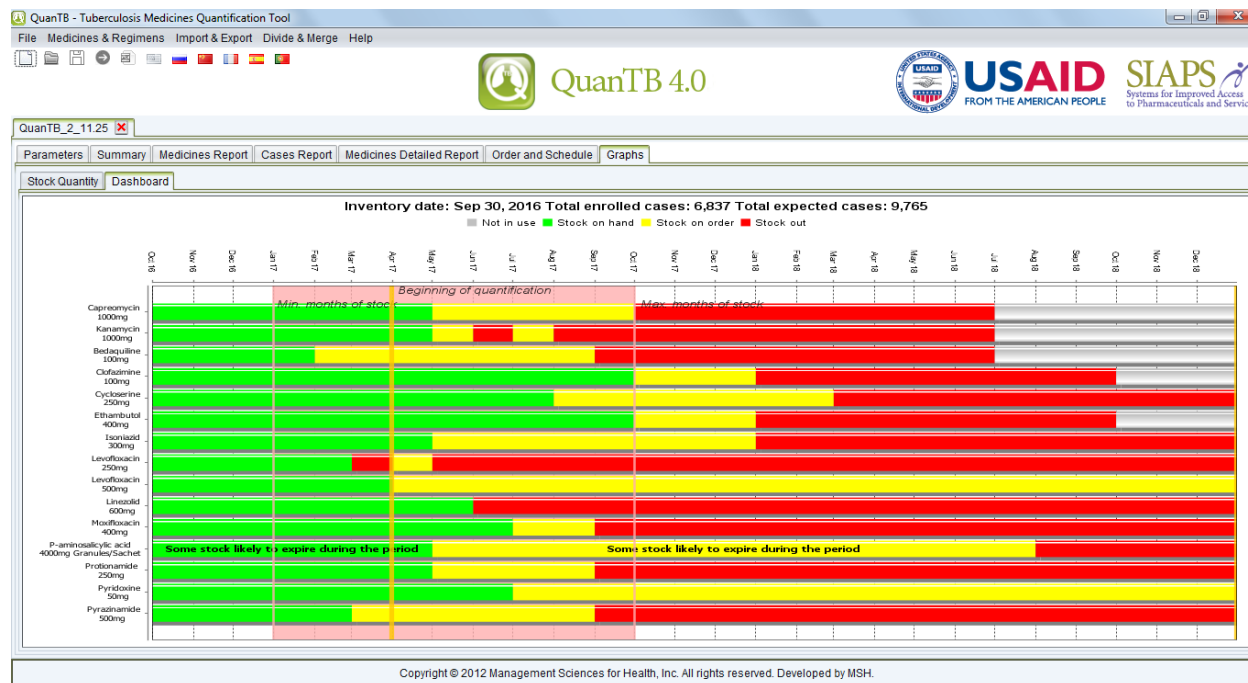


Figure 2. Sample QuanTB dashboard

<sup>11</sup> SIAPS. Sept. 2015. SIAPS TB Quarterly Report: QuanTB and Early Warning System Roll-out and Implementation. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

<sup>12</sup> SIAPS. May 2016. SIAPS TB Quarterly Report: QuanTB and Early Warning System Roll-out and Implementation. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

## Trend of Stock-outs of TB Medicines<sup>13,14,15,16,17,18,19</sup>

There have been no stock-outs of TB medicines since the country started using QuanTB in 2014. The country has had no experience of borrowing stock from or loaning it to other countries since it started using the tool.

- *Identified and addressed TB PSM challenges through GDF monitoring missions and external TB program review:* The missions identified several TB supply chain challenges and recommended interventions to address them. SIAPS provided technical assistance and collaborated with the NTP and other partners to address the identified challenges.
- *Strengthened information systems and improved data quality and reporting for informed decision making:* The implementation of QuanTB has improved the TB LMIS, data quality, and reporting.
- *Strengthened systems:* The EWS strengthened information for decision making by connecting patient- and stock-related data, which enabled the early detection of potential over- and understocks. Improved quantification and supply planning have resulted in improved procurement; stock status monitoring has helped to inform the redistribution of commodities in the event of under- or overstocks; staff capacity was enhanced through training and supportive supervision; and cost analysis, budgeting, and overall financial management systems were enhanced through better estimation of national needs and less wastage.
- Good coordination and collaboration were established among SIAPS, DOH/NTP subTWG, GDF, and other TB stakeholders and partners in Philippines.

## Challenges and Lessons Learned

| Area                       | Challenge   | Lesson Learned   |
|----------------------------|---|--|
| Human resource constraints | High turnover of staff mentored and trained in QuanTB and staff computer literacy   | Need to engage and train both key staff and a larger group of people who are involved in quantification and forecasting, such as DSM subTWG members. It is important to have up-to-date guidelines, procedures, and job aids readily available to help in knowledge and skills transfer. |
|                            | Commitment and engagement of the NTP and key partners due to competing commitments or the perception that QuanTB is a complex tool. |  |

<sup>13</sup> QuanTB Quarterly Report Philippines, September 2014.

<sup>14</sup> QuanTB Quarterly Report Philippines, April 2015.

<sup>15</sup> QuanTB Quarterly Report Philippines, August 2015.

<sup>16</sup> QuanTB Quarterly Report Philippines, November 2015.

<sup>17</sup> QuanTB Quarterly Report Philippines, March 2016.

<sup>18</sup> QuanTB Quarterly Report Philippines, May 2016.

<sup>19</sup> SIAPS. November 2016. Monitoring TB Medicine Availability: Quarterly Report – Philippines.



| <b>Area</b>                              | <b>Challenge</b>  | <b>Lesson Learned</b>   |
|--|---|---|
| <b>Data quality and reporting issues</b> | Quality and timeliness of reports from the facility level   | Need to capacitate and build the skills of health facility staff on proper reporting. Effective supportive supervision and monitoring is needed to continuously guide facility staff and review their performance and progress.   |
|  | Continuous expansion of health facilities results in consolidation of more reports at the central level   | The expansion of facilities will have a significant impact on both medicine quantification and processes such as reporting. This should also be considered, and a plan of action should be in place to improve the reporting mechanism in anticipation of the expansion.                    |
| <b>Planning and budgeting</b>            | Comprehensive system strengthening interventions sometimes require more resources than initially assumed, which can be problematic in resource-constrained settings such as Philippines | Adequate budgets are needed for institutional and human resource capacity building in routine DOH annual plans and in grant applications such as the Global Fund. Need to effectively and efficiently utilize available resources.  |
|  | A lot of time is needed to validate and consolidate the data needed to update QuanTB parameters   |   |
| <b>Supply chain management</b>           | Several factors influence the increase and/or decrease in medicine consumption, such as low enrollment of cases, unavailability of quality-assured products, and delay in deliveries    | Regular monitoring of TB stock levels against patient enrollment is key to ensuring the early identification of potential wastage of TB medicines. However, there is also a need to address other supply chain management factors contributing to overstocks or stock-outs of TB medicines. |

## CONCLUSION

With USAID/SIAPS technical assistance, the Philippines DOH NTP is successfully implementing the QuanTB EWS using a locally led, effective, and sustainable approach to improve forecasting, monitor stock, track expiries and stock-outs, make informed decisions, and take appropriate actions to close underlying pharmaceutical supply management gaps. Implementation of the tool has contributed to achieving the goal of ensuring an uninterrupted supply of TB medicines. There does not appear to be any funding gap to sustain the use of the tool. The NTP and its partners should continue to coordinate effectively and efficiently in utilizing available resources to sustain this use. A budget for ongoing human resource capacity building should be included in routine DOH annual plans and in grant applications such as the Global Fund.