



Implementing QuanTB to Improve Forecasting, Supply Planning, and Early Warning Systems for TB Medicines: South Sudan Report

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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

EWS	early warning system
GDF	Global Drug Facility
LMIS	logistics management information system
MDR-TB	Multidrug-resistant tuberculosis
MOH	Ministry of Health
NTP	National Tuberculosis Control Program
PSM	Procurement and Supply Management
TB	tuberculosis
SIAPS	System for Improved Access to Pharmaceuticals and Services
UNDP	United Nations Development Programme
USAID	US Agency for International Development

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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 South Sudan.

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 US Agency for International Development (USAID)-funded SIAPS Program has provided technical assistance to 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 expiries¹. 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.

South Sudan TB Program

South Sudan is a low-income country in East Africa with a 2015 population of approximately 12 million and a life expectancy at birth of 55.2 years for males and 57.1 years for females².

TB is still a major public health problem in South Sudan. The World Health Organization's 2013 Global TB report estimated the prevalence of TB in South Sudan at 257 per 100,000 population with an incidence of 146 per 100,000 for all TB cases, while the estimated mortality rate is 30 deaths from TB per 100,000 population. In 2014, 8,924 cases were reported³.

The country has 65 diagnostic, treatment, and reporting facilities and 22 facilities that carry out diagnoses but refer cases to treatment facilities. TB services are offered in 87 facilities, primarily state and county hospitals and public health care centers. Few public health care units offer TB services. At the end of 2014, there were 1,147 functional health facilities, with 7.5% of those offering TB services. South Sudan has had an average annual increase of reported cases of 14%. The country is preparing to roll out multidrug-resistant TB (MDR-TB) treatment services.

¹ 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.

² World Development Indicators. Available at: <http://data.worldbank.org/indicator>.

³ WHO. 2013. 2013 Global Tuberculosis Report.

In 2015, the NTP budget was USD 10 million (10% domestic funds, 59% international support, and 31% unfunded⁴). The Global Fund has been the main donor supporting the procurement of first-line TB medicines in South Sudan. First-line medicines for adults and children are procured from the GDF. At the central level, the warehouse is managed by the UNDP for all TB and HIV commodities. Health facilities initiate orders through quarterly reports, which are reviewed and validated by the NTP and sent to the warehouse. The orders are processed and distributed to the facilities with financial support from the Global Fund. However, some facilities collect their medicines directly from the central warehouse.

As the country strives to achieve its goal of reducing the prevalence of TB from 257/100,000 to 180/100,000 (30%) by 2030, as outlined in the NTP 2015–2019 Strategic Plan, control and treatment of all forms of TB cases is key. The government has the responsibility of ensuring uninterrupted access to quality TB medicines, and the partnership with SIAPS and other global partners, such as the GDF and the Global Fund, will help to achieve this goal.

Key Gaps that Necessitated QuanTB Implementation

- Inadequate technical skills and a lack of reliable tools for quantification
- Quantification based on issues data as opposed to the morbidity method, which allowed for a wide margin of error
- The lack of a system to track expiries and stock-outs.
- Human resource challenge: Only one NTP staff member was involved in pharmaceutical supply management, so a tool that could perform nearly all pharmaceutical supply management tasks was ideal.

SIAPS technical assistance and the implementation of the QuanTB EWS helped to address these gaps.

Goal and Objectives

SIAPS conducted a review of SIAPS TB technical assistance and the QuanTB implementation in South Sudan. Specific objectives were to determine:

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

This report summarizes key aspects and results of the South Sudan analysis.

⁴ WHO. 2015. 2015 Global Tuberculosis Report. Available at: <http://aidsdatahub.org/global-tuberculosis-report-2015-who-2015>.

STRATEGIC APPROACH

SIAPS developed QuanTB to promote a systems strengthening approach to TB pharmaceutical management⁵ through institutional and individual capacity building and strengthening data collection and quality.

Key interventions that were implemented in South Sudan included:

- *Staff capacity building:* SIAPS provided technical assistance in enhancing the country's TB medicine quantification capacity and skills.
- *Technical assistance for supply planning:* SIAPS provided technical assistance to the NTP for supply planning by using QuanTB to schedule deliveries.
- *Technical assistance for the introduction of new TB medicines:* SIAPS provided technical assistance to phase in new pediatric formulations. QuanTB was used to quantify the requirements and inform the transition timeline. SIAPS also provided support to quantify MDR-TB requirements as the country prepared to launch an MDR-TB program.
- *TB program review:* SIAPS provided support on PSM strengthening as part of the GDF's mission in March 2015. Recommendations on improving management of the TB medicines supply chain were made and shared with the NTP.

⁵ 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.

RESULTS

Process

SIAPS has provided TB technical assistance to South Sudan since January 2015. The program partnered with the South Sudan Ministry of Health (MOH)'s NTP, Challenge-TB, UNDP, and other local stakeholders to strengthen pharmaceutical supply management services in line with the country's strategic plan. The key focus of SIAPS technical assistance was capacity building for pharmaceutical supply management and services, including forecasting and quantification, inventory management, supply planning, and national information management, with the ultimate goal of ensuring uninterrupted access to TB medicines and eliminating consequences of poor supply management practices, such as expiries and stock-outs. At the time of this review, support was being provided through a regional senior technical advisor for TB pharmaceutical supply management based in Kenya. The country uses QuanTB for forecasting, procurement, supply planning, cost analysis, introduction of new medicines or regimens, and as an EWS. Data on TB cases are reported through a manual system from health facilities directly to the national level. Central medical stores provide data on stock on hand at the national warehouse and on expiry dates. The UNDP, which does the procurement, provides data on pending supplies.

Beneficiary Experiences

The key beneficiaries for QuanTB have been the NTP and the UNDP. The NTP had the opportunity to experience first-hand the benefits of using QuanTB. The UNDP has been using QuanTB quantification data and reports generated with support from SIAPS to conduct procurement. The NTP has fully adopted and institutionalized the tool for quantification and stock status monitoring because it is user friendly and simplifies the quantification process. The dashboards have proved very useful when briefing senior MOH officials on the national stock situation.

Accomplishments

Key accomplishments and results of SIAPS TB technical assistance/QuanTB implementation in South Sudan include:

- *Adopted and institutionalized QuanTB:* The tool was adopted and institutionalized as the national quantification tool.
- *Enhanced NTP quantification capacity and skills:* Ten staff members, including the logistics coordinator (nine from the MOH and one from UNDP) were trained on QuanTB in July 2015. Further capacity building through mentorships and refresher trainings was done in June 2016.

- SIAPS supported the NTP logistics coordinator to participate in the Global TB Supply Chain Meeting in Bangkok, Thailand, in March 2015. During this meeting, participants shared experiences, learned from others, prioritized their key TB supply chain challenges, and agreed on improvement interventions.
- *Improved forecasting and supply planning:* The EWS reports are generated on a quarterly basis and discussed with the NTP manager and UNDP staff for any recommended action to be implemented.
- *Implemented the EWS to prevent stock-outs and wastage of TB medicines:* SIAPS has provided support to the NTP for quarterly monitoring of TB stock status since January 2015. The support included generating EWS reports, reviewing and analyzing QuanTB outputs, and using QuanTB dashboard alerts to propose appropriate corrective actions. TB stock status monitoring has informed corrective actions in case of national-level stock-outs.

Sample QuanTB Dashboards

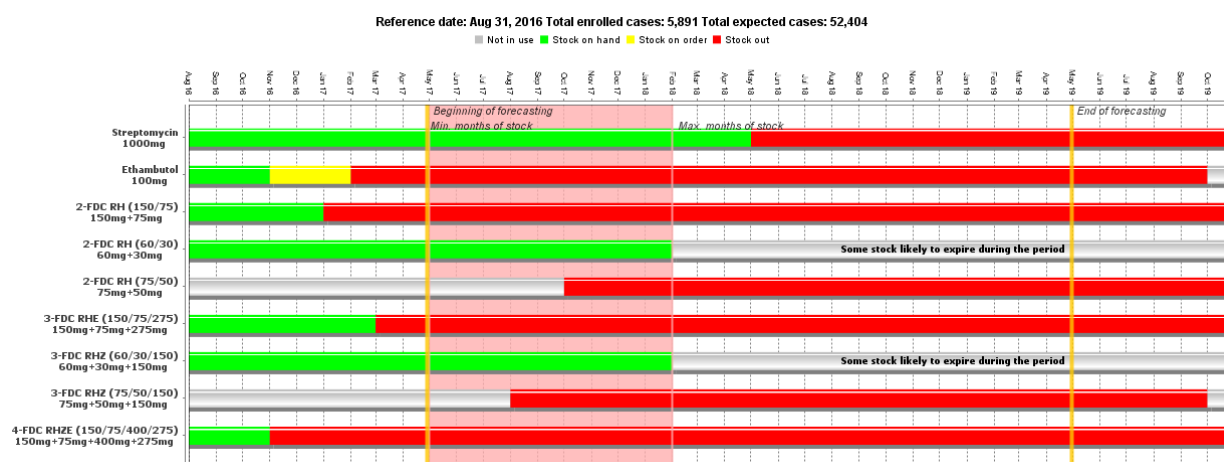


Figure 1. First-line medicines

- *Tracking key supply chain indicators:* The implementation of QuanTB has enabled the NTP to track key indicators, such as months of usable stock on hand, number/percentage of medicines out of stock, procurement lead times, and months of stock of expected supplies.

Trend of Stock-outs of TB Medicines⁶

There were no stock-outs of first-line TB medicines from January 2015 to September 2016. The country has not yet started second-line (MDR-TB) treatment.

⁶ Central Medical Stores stock status reports; UNDP reports on pending supplies

Challenges and Lessons Learned

Challenges

- Inadequate staffing: Only one staff member at the NTP is assigned to PSM, and key staff in charge of PSM are not adequately trained. The program also lacks M&E staff to support PSM with data collection and analysis.
- Political instability: This has resulted in key MOH staff leaving, which has made it difficult to acquire LMIS data from the periphery to inform redistribution. Stock-outs could go undetected, particularly in areas where the civil war is being fought.
- The lack of tools and systems for data collection from the facilities to the national level has been a challenge.
- The program does not have governance and co-ordination structures, such as commodity security committees and a quantification task force.

Lessons Learned

- Political stability is key for implementing programs. This affects staff retention and can be a contributing factor to stock-outs and irregular distribution.
- Regular monitoring of TB stock levels against patient enrollment, and particularly pediatric enrollment, is key to ensuring the early identification of potential wastage or stock-outs of TB medicines.
- Having the right cadre of staff is key to ensuring that the program benefits optimally from technical assistance and capacity-building interventions.

Gaps for Future Consideration

- Strengthen the PSM department by providing additional staff, preferably including a pharmacist, and building their capability to handle the national PSM system.
- Design and implement logistics management information system (LMIS) tools, manuals, and commodity management job aids to assist facility staff to manage the TB medicine inventory.
- Introduce mobile-based solutions for transmitting LMIS data from health facilities to address challenges associated with a vast terrain with little or no infrastructure, internet, and courier systems.

CONCLUSION

With USAID/SIAPS technical assistance, the South Sudan NTP has institutionalized and used QuanTB to improve quantification, monitoring of stock-outs and expiries, supply planning, and monitoring of key supply chain performance indicators. No stock-outs were reported despite the challenges in the country. The implementation and regular use of QuanTB contributed significantly to this positive outcome.