Tanzania: TB and Leprosy Logistics System Assessment

Quantitative and Qualitative Results from the LIAT and the LSAT

October 2011

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October 2011

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Acronyms

AIDS	Acquired Immunodeficiency Syndrome
CCHP	Comprehensive Council Health Plans
CDC	Centers for Disease Control and Prevention
CHMT	Council Health Management Team (district)
CTRL	Central TB Reference Laboratory
DCI	Development Cooperation Ireland
DTLC	District TB and Leprosy Coordinator
DOT	directly observed treatment
DOTS	directly observed treatment short course
EDL	essential drugs list
FBOs	faith based organizations
GDF	Global Drugs Facility
GIS	geogrpahic information system
GLRA	German Leprosy and TB Relief Association
GOT	Government of Tanzania
GPS	global positioning system
HIV	Human Immunodeficiency Virus
ICAP	International Center for AIDS Care and Treatment Programs
IUATLD	International Union Against Tuberculosis and Lung Diseases
KNCV	KNCV Tuberculosis Foundation
LIAT	Logistics Indicator Assessment Tool
LMIS	logistics management information system
LSAT	Logistics Systems Assessment Tool
M&E	monitoring and evaluation
MB	multibacillary
MDT	multiple drug therapy
MOHSW	Ministry of Health and Social Welfare
MSD	Medical Stores Department

NDP	national drug policy
NEDA	Netherlands Development Agency
NFSD	Novartis Foundation for Sustainable Development
NTLP	National Tuberculosis and Leprosy Program
NMC	NTLP Management Committee
OJT	On-the-job training
PASADA	People with AIDS in Dar es Salaam Archdiocese
PATH	Programs in Appropriate Technologies in Health
PB	paucibacillary
PPS	Probability proportional to size
RHMT	Regional Health Management Team
RNE	Royal Netherlands Embassy
RTLC	Regional TB and Leprosy Coordinator
SCMS	Supply Chain Management System
SDC	Swiss Agency for Development Co-operation
SDP	Service delivery point
SS+	Sputum smear positive
STGs	standard treatment guidelines
SWAp	Sector-wide approach
TB	Tuberculosis
TLCU	Tuberculosis and Leprosy Central Unit
TFDA	Tanzania Food and Drug Administration
TTC	Testing and treatment center
WHO	World Health Organization

Executive Summary

The importance of tuberculosis (TB) and leprosy treatment makes it critical that drugs and laboratory supplies are consistently available to treat patients, and to minimize drug resistance and the spread of the two diseases. In 1977, the Ministry of Health and Social Welfare (MOHSW) of Tanzania created the National TB and Leprosy Program (NTLP) to provide services, diagnosis, and treatment for TB and leprosy.

To achieve its objectives, the NTLP collaborates with various international and local partners. In July 2011, the Supply Chain Management System (SCMS) project, on behalf of the NTLP, conducted a comprehensive assessment of the current TB and leprosy (TBL) supply chain. Specifically, the assessment focused on assessing the overall functioning of the TBL supply chain system, including the availability of TB and leprosy drugs and key logistics information, identifying strengths and weaknesses to formulate recommendations to strengthen the TBL supply chain system, and providing baseline information to monitor progress and make any necessary changes.

This assessment was conducted using the Logistics Indicator Assessment Tool (LIAT) and the Logistics System Assessment Tool (LSAT), as well as a Geographic Information System (GIS) mapping tool. The LIAT assessment included review, at individual facilities, of logistics records and reports used for the management of TB and leprosy commodities, frequency and type of supervision, storage conditions, and stock availability on the day of the visit and for the six month period prior to the assessment. Over the course of two weeks, the LIAT study was conducted in 36 districts within nine regions (selected based on prevalence levels of TB), incorporating 208 public facilities, 40 faith-based organizations (FBOs) / private facilities and 24 district / regional stores, for a total of 272 randomly-selected sites. Within every district, health facilities representing all levels of service delivery (hospitals, health centres and dispensaries) were included. In the survey, the stock status of ten commodities, six TB and four leprosy drugs was assessed. Both adult and pediatric drugs were assessed in each category. The TB adult drugs included: 2 fixed dose combination (FDC)-RH (Rifampicin and Isoniazid), 3 FDC-RHE (Rifampicin, Isoniazid and Ethambutal), 4 FDC-RHZE (Rifampicin, Isoniazid, Pyrazinamide and Ethambutal) and Streptomycin injections. The pediatric drugs for TB included: 2 FDC-RH (pediatrics) and 3 FDC-RHZ (Rifampicin, Isoniazid and Pyrazinamide). The leprosy drugs included the adult and pediatric formulations for multibacillary (MB)-Rifampicin and Dapsone and paucibacillary (PB)-Rifampicin, Clofazimine and Dapsone.

Thereafter an LSAT workshop was held with 23 participants representing different levels of the TBL supply chain, partners, and donors. The LSAT is a comprehensive qualitative diagnostic and monitoring tool from which strengths and weaknesses of the logistics system are identified in a group discussion format. The information collected is analyzed to identify strengths, weaknesses and recommendations, and to subsequently outline appropriate interventions and activities as identified by TBL stakeholders.

The assessment found that, in many regions, districts did not properly maintain logistics management information system (LMIS) forms. Forms used varied widely between facilities. Request and Requisition forms are not used at the facility level. Facilities are scheduled to submit morbidity and patient data on a monthly basis, as means of ordering new stocks. Facilities with no patients maintain no stocks. Many patients are referred to district facilities for diagnostics and to collect their medications, which are then brought to the local health facility for directly observed treatment. This mechanism does not account for such variables as new patients, changes in regimen, current stock levels, or accessibility. The current pipeline for TBL commodities is 39 months, while the shelf life of most TBL commodities is from 24 to 36 months from the date of manufacture which drastically increases chances of expiry before the commodities even reach the health facility. However, assessment results show that the current inventory control guidelines are not being followed at any level.

The NTLP has national guidelines for management of TB and leprosy commodities, however they are not found to be widely available at each level, and require updating to accurately reflect the procedures and protocols of the program. Frequency of distribution of commodities varies widely from the district to the facilities. Assessment findings displayed a negative impact on product availability at the facility level when distribution of commodities is not routinized. Facilities where staff has to travel to the district to collect TBL commodities are shown to have higher rates of stockouts in comparison to facilities that have commodities delivered to them from the district. Participants in both assessments expressed dissatisfaction with the poor adherence to distribution schedules. Overall, with the exception of a few commodities (3 FDC-RHZ, PB adult formulation and streptomycin), a higher percentage of both public and private facilities experienced stockouts during the previous six months as opposed to on the day of the visit. Availability for adult first-line treatment drugs for TB (4 FDC-RHZE and 2 FDC-RH) fared much better in comparison to retreatment drugs for TB (3 FDC-RHE and streptomycin). During the time of the assessment, there was a national level stockout of streptomycin. As a result, 60 percent of stores (half of all public facilities on day of visit) were stocked out, both on the day of visit and during the previous six months. In cases of stockout, retreatment patients are given the same treatment as new patients, which is concerning as this can lead to drug resistance. In cases of stockouts of pediatric treatments, health facility staff reported cutting up adult treatment pills in order to provide drugs for pediatric patients, which can potentially lead to toxicity or drug resistance.

Fewer number of health facilities were found to manage leprosy drugs than TB drugs. With the exception of MB for adults, none of the FBO/private facilities manage leprosy drugs. Days of stockout for pediatric formulation of RH and MB-adult commodities ranged from 72-100 days over the six month time period assessed compared to three or fewer days at FBO/private facilities. These results highlight the need to improve stock levels, inventory and distribution practices and buffer stock, and to decrease lead time in the public sector. In summary, product availability seems to be influenced more by the number of patients at the end of the month, and the willingness and ability of either the facilities or the patients to pick-up their commodities from the next higher level, than by the NTLP delivery program, which requires the District TB and Leprosy Coordinator (DTLC) to deliver commodities, even to the remote facilities, on a monthly basis.

Stock keeping records are not well maintained; almost half of the facilities surveyed did not use or maintain updated stock cards, making it difficult to determine consumption and stockouts over the last six months. In addition, consumption data is not captured at the facility level, though there are reporting forms at the regional and district level which include information on stock on hand and total number of patients per regimen at the health facility level. The NTLP conducts a national quantification every year for first-line commodities in collaboration with the Global Drug Facility (GDF). The quantification exercise is conducted using patient data; consumption data is not used to inform quantification exercises. Procurement for both TB and leprosy commodities is heavily donor dependent; GDF is responsible for the procurement for first-line TB treatments and streptomycin. Leprosy treatment, on the other hand, is procured by the World Health Organization (WHO). Both TBL commodities are stored at the Medical Stores Department (MSD).

Less than half (48 percent) of all facilities assessed reported receiving supervision of drug management in the previous 90 days, per NTLP policy. Many regional and district coordinators indicated funding constraints for such items as fuel, which limits their ability to access remote facilities.

Overall storage conditions were found to be fair across the surveyed facilities with regional hospitals faring a little better. Insufficient storage space and knowledge of maintaining appropriate storage practices seemed to be the major challenges facing both health centres and facilities. LSAT discussants also expressed similar concern. First-to-expire, first out (FEFO) was commonly understood, however expiries were often found in desk drawers and crumpled boxes, unaccounted for.

Some of the recommendations identified to improve the effectiveness and efficiency of the NTLP include the following:

1. Revise the current logistic system through a participatory process involving all stakeholders,

2. designate staff within the NTLP responsible for logistics management who can help strengthen coordination between the NTLP, MSD, regional, district and facility level staff,

3. improve forecasting methodology to include consumption data,

4. standardize logistics management tools, including drafting and updating of logistics management guidelines,

5. formalize Standard Operating Procedures (SOPs) for commodity management, relevant job aids and training curriculum,

6. coordinate with the Government of Tanzania (GOT) and advise them to integrate the budget for supervision, monitoring and distribution into the district Comprehensive Council Health Plans (CCHP) and make funding available for such activities,

7. allocate additional funds for training, supervision and building capacity in logistics management at all levels.

These efforts will help ensure a well-functioning logistics system and allow the NTLP to focus on its key objectives of diagnosing and treating all TBL patients in Tanzania.

Background

The government of Tanzania spends approximately US$ 14.70 per capita on health compared to the WHO recommended $34.00 (Public Expenditure Review Report 2009/10; Ministry of Health and Social Welfare). Data from the Health Information Management System (HMIS) of the Ministry of Health and Social Welfare (MOHSW) shows that communicable diseases are still the major causes of morbidity and mortality, with HIV prevalence of 5.7 percent among 15-49 years. Tuberculosis (TB) accounts for approximately 8 percent of the burden of diseases, and 6 percent of all deaths in the country for people ages five and over, primarily due to human immunodeficiency virus (HIV)/TB co-infection.[1]

Government, parastatal institutions, non-governmental organizations including faith-based and private for profit are the major providers of health services. In 2010, there were approximately 5,972 health facilities, of which 3,895, or 69 percent, were government owned or District Designated Hospitals (DDH)[2].

Tanzania ranks 15th on the list of 22 high-burden TB countries in the world. In 2007, there were 59,000 notified and new cases. The table below provides data on TB mortality, prevalence and incidence rates in Tanzania.

Table 1. TB Epidemiology[3]

Estimates of Burden	Number (thousands)	Rate (per 100,000 pop)
Total Population: 44 million		
Mortality (excluding HIV)	4.8 (1.8-10)	11 (4.2-23)
Prevalence (incl. HIV)	75 (30-130)	170 (68-303)
Incidence (incl. HIV)	80 (75-85)	183 (171-195)
Incidence (HIV positive)	38 (26-49)	86 (61-112)
Case detection, all forms (%)	77 (72-82)	

Source: WHO Tanzania TB Profile, 2011

As a result of improved quality of services and evaluation, Tanzania met the World Health Organization's (WHO) global target of 85 percent treatment success rate in 2007. However, the case detection rate for new sputum smear positive for TB (SS+) cases remains low at 51 percent, well below WHO's target of 70 percent. Case notification rates have fallen over the last three years. The

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1 Ministry of Health and Social Welfare. National Tuberculosis and Leprosy Programme. Annual Report, 2010.
2 Ibid
3https://extranet.who.int/sree/Reports?op=Replet&name=/WHO_HQ_Reports/G2/PROD/EXT/TBCountryProfile&ISO2=TZ&outtype=html

HIV/acquired immunodeficiency virus (AIDS) epidemic is associated with a 60 percent increase in active TB in Tanzania. Fifty percent of notified cases were tested for HIV in 2007, and the prevalence of HIV infection among TB patients is estimated at 47 percent4. People co-infected with HIV and TB are at a particularly high risk for active TB since TB is a leading cause of death among HIV-infected individuals.

Multiple Drug Therapy (MDT), used for leprosy control, was introduced in 1983 and reached national coverage in 1990. This resulted in a rapid decline in the number of registered leprosy cases on treatment, from nearly 35,000 cases in 1983 to about 3,500 in 2006, thereby achieving leprosy elimination targets. Based on the last update on the country's National TB and Leprosy Program (NTLP) website, registered prevalence of leprosy is 0.9/10,000.

Tuberculosis and Leprosy Program Administration

In July 1977, the MOH launched the NTLP which falls under the Unit of Epidemiology and Disease Control in the Department of Preventive Services at the MOH. Tanzania was the first country in the world to successfully combine the control of TB and leprosy into a single program.

Both TB and leprosy services are provided free of charge within the general health care services but are coordinated by TB/Leprosy coordinators at all levels. The mission of the NTLP is to provide high quality and effective interventions to control TB and leprosy in Tanzania with a focus on gender mainstreaming, equity and accessibility for those most at risk. The NTLP is responsible for facilitating early diagnosis, treatment and cure for as many tuberculosis and leprosy patients as possible so as to reduce the incidence and prevalence of these diseases until they are no longer a major public health problem in the country, and to reduce the physical disability and psycho-social suffering caused by the two diseases.[5]

To achieve its objectives, the NTLP collaborates with various partners including the Swiss Agency for Development Co-operation (SDC), the Netherlands Development Agency (NEDA) through the Royal Netherlands Embassy (RNE), Development Cooperation Ireland (DCI), the German Leprosy and Tuberculosis Relief Association (GLRA), KNCV Tuberculosis Foundation (KNCV) and WHO. Local NGOs include People with AIDS in Dar es Salaam Archdiocese (PASADA), Tanzania Leprosy Association, Rufiji Leprosy Trust and a number of faith-based hospitals. International partners and the MOH together form the NTLP Management Committee (NMC), which oversees the implementation of the NTLP.

Administratively, the NTLP operates at three levels: national, regional and district. At the national level, the Tuberculosis and Leprosy Central Unit (TLCU), within the MOH, coordinates TB and leprosy control activities. The Central TB Reference Laboratory (CTRL) situated at Muhimbili national hospital is part of the central unit.

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4 USAID. Infectious Diseases, Country Profile. Tanzania, May 2009.
http://www.usaid.gov/our_work/global_health/id/tuberculosis/countries/africa/tanzania_profile.html
5 Tanzania Ministry of Health and Social Welfare. National TB and Leprosy Program website. http://www.moh.go.tz/NTLP/index.php

The TLCU is responsible for planning, monitoring, evaluation and resource mobilization. It is also responsible for coordinating training of staff, supervision of field activities, data aggregation and analysis, quality control and operational research. On-the-job training (OJT) of Regional TB and Leprosy Coordinators (RTLCs) and District TB and Leprosy Coordinators (DTLCs) is done during supervision visits to each region and during meetings.

The NTLP has divided Tanzania into regions and districts which are responsible for TB diagnosis, management and prevention. Each NTLP region is further subdivided into NTLP districts. These divisions generally follow the national regional and district lines, but with some exceptions—districts in big cities like Dar es Salaam hold the status of a region. Thus each of the three districts in Dar es Salaam city has approximately seven to nine NTLP districts. There is also a separate NTLP region in Dar es Salaam which focuses on addressing the needs of major private hospitals. Overall coordination and management of the TB and leprosy (TBL) program at the regional and district level is done by the RTLCs and the DTLCs respectively. Zanzibar operates as a separate TBL control program but with similar organo-structures as on the mainland[6].

Information and Commodity Flow

Information Flow

The design for the current TB and leprosy program requires health facilities to collect and report data on the total number of TB patients by regimen and stock on hand. DTLCs collect this information from the health facilities on a monthly basis. The DTLCs compile this information and during the quarterly meeting for DTLCs, it is shared with the RTLC. It is the responsibility of each RTLC to then compile all of the reports from the districts and creates regional report which is submitted to the NTLP on a quarterly basis. Upon receipt, the NTLP reviews the data and prepares a commodities distribution list which is sent to the Medical Stores Department (MSD). This information is used for national level programming support, quantification and forecasting efforts, and supply planning.

Commodity Flow

All TBL commodities procured are WHO-prequalified. The Global Drug Facility (GDF) provides free TB commodities to the NTLP. Per the NTLP's instructions, MSD Central is responsible for delivering commodities to the MSD zonal warehouses where TB and leprosy commodities are transported but not stored. The commodities are then distributed to the RTLC who stores the commodities in the regional pharmacy store and distributes commodities to each DTLC based on each district's needs. The DTLC is then responsible for distributing commodities to the health facilities.

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6 Tanzania Ministry of Health and Social Welfare. National TB and Leprosy Program website. http://www.moh.go.tz/NTLP/index.php

Figure 1. Commodity and Information Flow

Commodity Flow
Information Flow
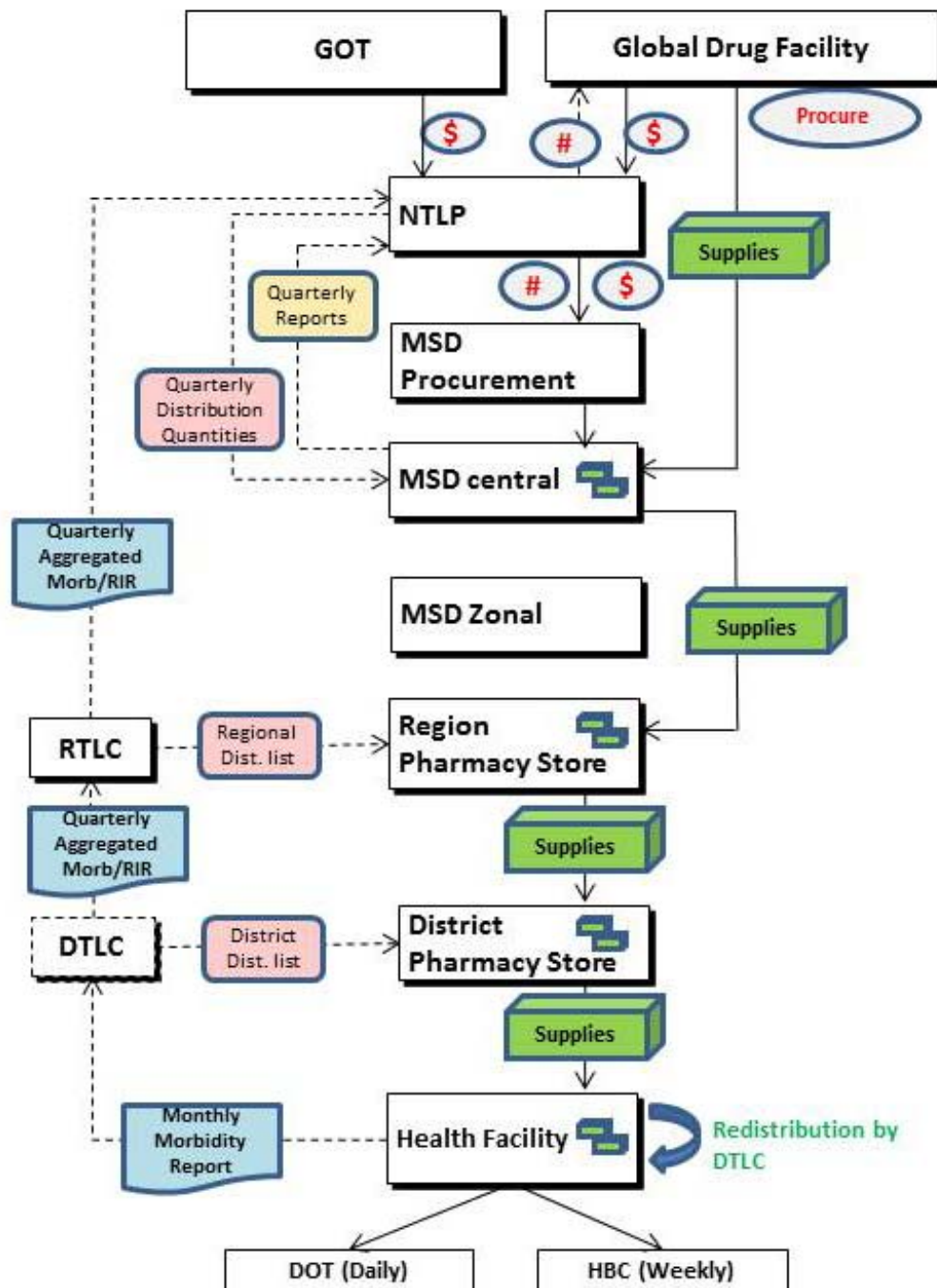
Purpose and Objectives

The purpose of the Tanzania TB and leprosy logistics system assessment was to collect and analyze both qualitative and quantitative data, using the Logistics System Assessment Tool (LSAT) and the Logistics Indicator Assessment Tool (LIAT). This assessment was conducted on behalf of the NTLP; the results of the assessment will provide information on TBL commodity availability and overall logistics system performance that can be used for planning interventions to address problem areas, build on system strengths, and allow the NTLP, donors and other partners to monitor progress and track changes over time in order to adjust strategies as appropriate.

Objectives

- To assess the overall functioning of the TBL supply chain system, including the availability of TB and leprosy drugs, and key logistics information

- To identify strengths and weaknesses and formulate recommendations to strengthen the TBL supply chain system

- To provide baseline information in order to monitor progress and make any necessary changes

Assessment Methodology

The comprehensive assessment of the TB and leprosy logistics system comprised of quantitative and qualitative data collection using two data collection tools—the LIAT and the LSAT. The assessment training and data collection occurred in July and August 2011 and preliminary results, which included key indicators related to the logistics status of TB and leprosy commodities, were shared with the NTLP and other stakeholders during a debriefing in Dar es Salaam.

Logistics Indicators Assessment Tool (LIAT)

The LIAT, a quantitative data collection instrument developed by the DELIVER Project, was used to conduct a facility-based survey to assess the TBL commodity logistics system performance and commodity availability. This tool collects information on stock status, storage conditions, the logistics management information system (LMIS), supervision, and transportation. For the purposes of this assessment, the LIAT was adapted and customized specifically for the TBL program in Tanzania and used to assess a select number of TBL drugs. A copy of the final LIAT used for the survey is attached as Annex 6.

Sampling Methodology

Based on the recommendations of the NTLP, the study was conducted in nine regions which included seven high TB prevalence and two low prevalence regions. High prevalence regions included the following: Arusha, Dar es Salaam, Iringa, Mbeya, Morogoro, Mwanza, and Tanga. Low prevalence regions included Lindi and Mtwara. Table 2 below shows the prevalence rates for the selected regions, ranging from 26 percent for Dar es Salaam to less than 1 percent for both Lindi and Mtwara. All other high prevalence regions were around 6-7 percent.

Table 2. TB Prevalence Rates

Region	Prevalence Rates (%)
1. Dar es Salaam	26%
2. Arusha	7%
3. Mwanza	7%
4. Iringa	6%
5. Mbeya	6%
6. Morogoro	6%
7. Lindi	<1%
8. Mtwara	<1%
9. Total of all other Regions	35%

Source: NTLP, via SCMS- Tanzania

The study was conducted in 36 districts within nine regions. The study sample, calculated for a five percent margin of error and 90 percent confidence interval, included both randomly selected districts and health facilities within the selected regions. Within every district, health facilities representing all levels of service delivery (hospitals, health centers and dispensaries) were included. Faith-based (FBO) and private health facilities were also included in the sampling frame because they receive free TBL commodities through the NTLP. In addition, all district and regional stores, where available, were included. However, MSD zonal stores were not included in the sample because they serve only as transit stores-- used very briefly before the commodities are distributed to regional pharmacy stores.

A multistage, random sampling methodology was applied to select survey sites. In the first stage of sampling, nine regions based on prevalence rates for TB were purposefully selected. In the second stage, 36 districts within the nine regions were selected randomly. In the third stage, probability proportional to size (PPS) was used to randomly select total number of facilities per district. As a result, districts with a higher number of facilities have a larger representation within the sample.

Alternative sites were also selected to replace any non-functioning sites or sites that had not managed TBL commodities in the most recent six months. The final sample size included 208 public facilities, 40 Faith Based Organizations/private facilities and 24 district/regional stores for a total sample size of 272 sites.

A list of the districts visited and their surveyed facilities is attached as Annex 1. A list of the data collectors who carried out the survey is included in Annex 2.

LIAT Data Collection

Data was collected through observations, conducting physical inventory counts, and interviews with the RTLCs and DTLCs, regional and district store managers, and facility-level personnel responsible for providing TBL commodities to clients. In order to allow access for data collectors to visit health facilities, the NTLP provided an official letter explaining the purpose and objectives of the assessment. This letter was circulated to all RTLCs and DTLCs visited. A DTLC or a district representative traveled with each team for data collection.

Data collectors gathering TB and Leprosy supply chain information on mobile phones

Data collection took place over the course of two weeks, from August 1 through August 12, 2011. A total of 16 teams, comprising of 33 data collectors visited nine regions for a two-week period to collect data from the selected health facilities.

Mobile phones (Nokia E63) were used for data collection. EpiSurveyor, a mobile application designed by DataDyne, an organization that specializes in providing mhealth related services, was used for this purpose. The team worked in coordination with the NTLP to customize the existing LIAT tool for the Tanzania context. The finalized paper-based tool was developed online via EpiSurveyor and downloaded onto the phones to serve as a mobile data collection tool. EpiSurveyor facilitates the transfer of data from internet-enabled phones directly to the Internet. Upon completion of the survey at each facility, data collectors were able to immediately upload the information to a centralized database.

Prior to survey implementation, data collectors participated in a five-day training in Dar es Salaam on the technical aspects of supply chain management, use of the survey tool and EpiSurveyor, and on mapping sites using the GPS devices. As part of the training, data collection guidelines were discussed to: identify the types of information to be gathered, standardize the data collection process and promote comparability of results. Input from the data collectors was incorporated into the survey tool, which was then pilot tested at eight health facilities in Dar es Salaam and modifications were made to the tool prior to its use in the assessment. After data collection, data were transferred from the EpiSurveyor database into Excel for data analysis.

Geographic information System (GIS) Analysis

In addition, Global Positioning System (GPS) devices were also used to map all of the surveyed health facilities. These maps provide an illustrative representation of the health facility data as it pertains to the TB and leprosy supply chain in Tanzania. Integration of GIS tools and spatial analysis in the research methodology for analysis of logistics indicators helps to more clearly assess how geography is affecting the function of the TBL logistics system. Some key maps are included in the body of the report; the remaining maps can be found in Annex 7.

Data Management and Analysis

Records from each of the facilities were uploaded directly from the phones to the web-based EpiSurveyor database based on network connectivity. Records were routinely inventoried, cleaned and validated throughout the data collection period by a team in the home office. Data cleaning and validation continued for one week following the completion of data collection. Some problems encountered during this process included receipt of duplicate records, errors in entering facility identification and GPS codes, and other basic data entry errors. The format of records received in EpiSurveyor allowed for easy transfer of data to Excel, which was used for data cleaning and analysis.

Quality Assurance

Several methods were used to ensure quality adherence throughout the assessment process. The data collection instrument was reviewed by the NTLP and SCMS staff before the training to ensure it was adapted to the Tanzania context; the instrument was reviewed and modified again following a pilot test during the training, with input from data collectors. The training also included a comprehensive review of the tool to ensure data collectors were fully versed in the questions and methodology prior to field data collection.

Each team consisted of a team leader who was responsible for checking the accuracy of data entry on the mobile phones and for reviewing all data for any errors and completeness of the forms prior to leaving the health facility and uploading the records to the server.

Several quality safeguards were incorporated into the data entry program, such as automatic skips where appropriate, value ranges, and coding checks. As records were cleaned and validated throughout the data collection period, data collectors were immediately alerted of any errors noted in the uploaded data, and asked to verify their answers. After completion of the survey, each team met with the assessment team leader in Dar es Salaam to answer any remaining questions.

Limitations

There were several limitations of the survey:

- As the sample size was calculated for the national level, individual regional level analysis was not representative. Therefore one should be cautious when interpreting results.

- Since many of the health facilities did not maintain updated stock cards, some of the analysis was based on only those facilities with updated stock keeping records (store ledgers or bin cards) and likely underestimated total number of facilities that experienced stockouts in the last six months and the average duration of stockouts.

- Since facilities only maintain stock for TBL commodities when they have TBL patients, average monthly consumption and months of stock indicators were not calculated.

Indicator Choice

The indicators assessed were selected to ensure that meaningful baseline metrics would be collected to enable comparison with future assessments while also providing stakeholders with up-to-date information on the current operation of the system. Below is a list of the primary indicators.

Table 3. List of Primary Indicators

Indicator	Data Source(s)
Percentage of facilities with ledger books available for managing TBL products (by product)	Stock keeping records for each of the selected products
Percentage of facilities with ledger books updated (by product)	Stock keeping records for each of the selected products
Percentage of facilities with accurate logistics records	Stock keeping records and physical inventory
Percentage of facilities utilizing reports with logistics information	Respondent
Percentage of facilities trained in completing logistics forms	Respondent
Percentage of facilities receiving supervision within one or three months	Respondent
Percentage of each transportation type used for obtaining supplies	Respondent

Indicator	Data Source(s)
Percentage of sites stocked out of product at time of visit (by product)	Physical inventory and respondent
Percentage of sites stocked out of product in last six months (where data available)	Stock keeping records
Average duration of stockout in the previous six months (where data are available)	Stock keeping records
Percentage of storage facilities that met storage conditions	Observations of data collectors on the day of the visit

Logistics System Assessment Tool (LSAT)

The LSAT, a qualitative data-gathering tool originally developed by the DELIVER Project, was used to assess the TBL commodity logistics system and provide contextual information about the environment within which the TB and leprosy logistics system operates. The LSAT is a comprehensive qualitative diagnostic and monitoring tool from which strengths and weaknesses of the logistics system are identified in a group discussion format, involving participants from all levels of the logistics system. The information collected using the LSAT was analyzed to identify strengths, weaknesses and recommendations, and subsequently outline appropriate interventions and activities. A copy of the LSAT and answers completed during this assessment can be found as Annex 5.

LSAT Data Collection

A two-day workshop was held with 23 participants representing different levels of the supply chain, partners, and donors. Attendees included NTLP staff, pharmacists, RTLCs and DTLCs from mainland Tanzania and Zanzibar. Partners represented included the German Leprosy Relief Association (GLRA) and the International Center for AIDS Care and Treatment Programs (ICAP). Annex 3 lists the LSAT participants.

LSAT workshop participants discuss the TB and Leprosy supply chain strengths and weaknesses.

The participants were divided into groups based on their areas of expertise. They were asked to describe the various components of the existing TBL logistics system in Tanzania and identify strengths, weaknesses, and specific recommendations on each logistics component. The results of the workshop were meant to complement and inform the findings from the LIAT.

The areas assessed included the following: organization and staffing, the logistics management information system, product selection, forecasting, obtaining supplies/procurement, inventory control procedures, warehousing and storage, transport and distribution, organizational support for the logistics system, product use, finance/donor coordination, and commodity security. Each group was responsible for completing the LSAT section corresponding to one to three of the above-mentioned components. Each group presented the strengths, weaknesses, and recommendations for its section, and others also had the opportunity to comment and provide any additional information. Finally, participants discussed recommendations and voted to prioritize recommendations.

Assessment Findings

The assessment findings below are a synthesis of the key findings from both the qualitative and the quantitative assessments, the LSAT and the LIAT, respectively. The findings from the LSAT reflect the viewpoint of the participants acting within the system.[7] The LSAT exercise provided an overview of the current situation with respect to the TB and leprosy supply chain system in Tanzania and is used to validate and complement the findings from the LIAT. The LIAT findings provide quantitative data from the health facilities surveyed and include information on commodity availability such as stock status, reporting and ordering, use of the LMIS, training, supervision, transportation and compliance with the storage conditions.

For the purposes of this assessment, both tools were adapted and customized specifically for the TBL program in Tanzania and used to assess a select number of TBL drugs. Together, both sets of findings provide a comprehensive analysis of the TB and leprosy supply chain system in Tanzania.

In order to get an accurate sense of the TBL supply chain situation in Tanzania, the quantitative assessment included 272 facility visits. The facilities visited were divided into three categories: public facilities (including dispensaries, health centres and hospitals), faith-based (FBO)/private facilities (including dispensaries, health centres and hospitals), and stores (including district and regional stores). The following is a breakdown of facilities visited by category:

Table 4. Types of Facility Visited

Facility Category	Number visited
Public facilities	208
FBO/Private facilities	40
Stores	24
Total	272

The map below shows all the facilities visited during the assessment.

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7 In some cases information may have changed slightly based upon the results of the LIAT.

Figure 2. Facilities Surveyed for the LIAT, 2011
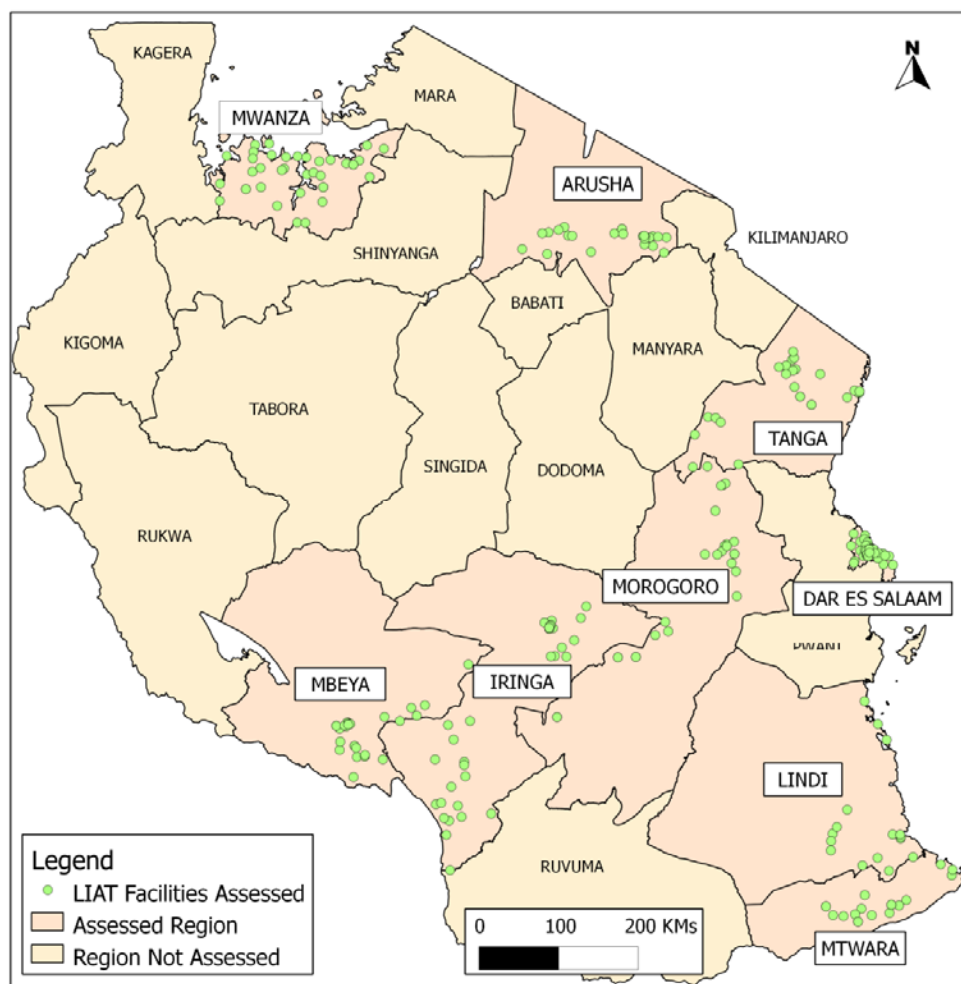
Organizational Support for Logistics System

The TBL system in Tanzania has several tiers—central, regional, district and health facilities. As discussed in the LSAT workshop, various donors provide support in areas including training and supervision, quantification, and transport and distribution. There is quarterly communication between the central and the regional level, and from the regional to the district level. Though the district and regional levels regularly communicate and interact during quarterly meetings, LSAT participants reported that communication between the district level and health facilities is not routine. Due to distance to certain facilities, many DTLCs don't regularly visit all their facilities. A supervision checklist which also includes logistics management has been developed, but is not widely circulated or used by everyone. Although the Council Health Management Team (CHMT) conducts supervision visits to health facilities on a routine basis, supervision on logistics management to the health facilities by DTLCs is inadequate and not done on a routine basis. Results from the LIAT Table 12 further validate these findings. This is often attributable to budgetary constraints at the district level.

There is currently no training curriculum on logistics management, and other supplementary tools to facilitate on-the-job training are not readily available at health facilities. LSAT workshop participants reported a need for training in all aspects of logistics management. Though GLRA provides motorcycles for TBL supervision and distribution; however, they are not always well maintained due to limited funds for vehicle maintenance and fuel. The NTLP guidelines include information on logistics management and roles and responsibilities, but have not been widely disseminated and are in need of revisions and updates. LIAT data collectors did not report seeing these guidelines at the surveyed health facilities.

Organization and Staffing

The LSAT portion of the assessment revealed that the Tanzania TB and leprosy program does not currently operate under the formal guidance of a centralized Logistics Management Unit (LMU). However there are mechanisms in place to implement logistics activities. There is an informal logistics management structure in that the NTLP staff such as the pharmacist, supplies officer and data management staff are responsible for management and coordination of all logistics activities for the program. This is done in coordination with the MSD and the Pharmaceutical Services Unit (PSU) in order to collaborate on commodity distribution and management at the service delivery points.

There are standardized reporting forms at the regional and district level which include information on stock on hand and total number of patients that are being managed by the health facilities. The NTLP conducts a national quantification every year for the first-line commodities in collaboration with the GDF. Forecasting efforts for the second line of treatment is done by the NTLP itself. The quantification exercise is conducted using the documented patient registers that are calculated from the district level to the region and then from there aggregated into the national level quantification. Guidelines for the management of the TB and leprosy program exist, however they were not found to be widely available at each level of the supply chain; additionally, the guidelines need updating to accurately reflect the current procedures and protocols of the program.

GDF procures TB first line drugs and streptomycin in consultation with the NTLP, and MSD is responsible for handling customs clearance and receiving of those commodities. Procurement of second-line treatment is done by MSD and following this the Tanzania Food and Drug Administration (TFDA) assists with registration of new commodities. Leprosy treatment is bought and cleared solely by the World Health Organization (WHO) and is stored at the MSD.

The MSD is primarily responsible for storage and distribution of commodities. The program is responsible for drafting the commodity distribution list which is shared with the MSD, which then implements the distribution process. The NTLP in coordination with the GDF is also responsible for product selection, which is decided through the TB and leprosy standard treatment guidelines.

The NTLP does not currently have staff specifically allocated to managing logistics at the regional and district levels. This function is managed informally by the RTLCs and DTLCs. At times, the CHMT conducts supervision which addresses a variety of program areas. Though drug management is a component addressed during supervision, there is no supervision specifically purposed for drugs

logistics management. There are also limited human resources towards completing all logistics related tasks, as they are not specifically assigned but rather component pieces of existing job descriptions. There is coordination between regional and the district level, however, coordination between district and the health facility level is not routinized and varies greatly by district. Information flow from the facility level to the district is sporadic.

Product Selection

As discussed in the LSAT workshop, the process for selecting TB products is fairly well established and functional. A National Drug Policy (NDP) and Essential Drug List (EDL) are in place. The EDL includes WHO prequalified treatment regimens for TB and leprosy in Tanzania. The NDP contains written guidelines for the donation of products, no duty taxes are imposed on imported TBL commodities and all donated commodities are exempt from duty tax to facilitate commodity availability. The Tanzania Food and Drug Administration (TFDA) must approve of and register any new TBL commodities before they are permitted to enter the country for use. The TFDA begins the registration process by examining whether any newly introduced commodity has already been pre-qualified by the WHO. The essential drug list selects TB and leprosy commodities through a series of criteria, two essentials being the prevalence of the disease and the need for the particular commodities as well as the cost effectiveness of the commodities. The essential drugs list allows for product selection, which ensures that all commodities are chosen based on quality assurance standards and cost effectiveness. The essential drug list includes all drugs needed for effective treatment of TB and leprosy, and adheres to the standard treatment guidelines (STGs) for treatment protocols.

Obtaining Supplies and Procurement

LSAT participants noted that a flexible procurement system to accommodate program changes and a tracking system to monitor orders is in place. The NTLP works in coordination with the GDF and the MSD to draft a national procurement plan for the needs of the program. The persons responsible for ordering commodities from each level of the supply chain are the RTLC for the regional level, the DTLC for the district level and a focal person or pharmacist at the facility level who coordinates with the DTLC to place orders for commodities based on patient data. Each quarter, the NTLP uses quarterly reports from regions to develop a shipment schedule, which is shared with MSD. MSD then packs each region's consignment per the distribution plan and distributes the consignments via the MSD zonal stores to the regions. At the regional level, the RTLCs are responsible for distributing commodities to their respective districts. From the district level down, the DTLC authorizes distribution based on the availability of commodities. If full supply is not available, the DTLC begins rationing.

Procurement plans are developed by the program with MSD based on the following: current inventory levels, issues data which is used as a proxy for consumption data, lead times from the suppliers and donors, and established stock levels. The nationally established inventory control levels should have two months of stock and one month buffer stock at the health facilities; the district and regional levels should have 3 months of stock on hand and 3 months of buffer, and the national

warehouse should have 12 months of stock with 12 months of buffer. However, these inventory levels and buffer stocks are not currently being maintained at any of these levels.

Distribution schedules from the central to zonal level are established in coordination with MSD's regular distribution cycle. The MSD zonal warehouse distributes commodities to the region; however, from the region to the district, either the region delivers or the district collects commodities using program or CHMT vehicles. From the district to the facilities, there are routes designated by the DMO and the DTLC is responsible for distribution, usually done with TBL-program specific motorcycles. However, as indicated in the LIAT findings, this is not always the practice.

Procurement plans are not often adjusted due to the consistency of donor funding for the NTLP. There has never been a budget shortfall, although funding delays have resulted in delayed procurement and supply disruption, which has led to rationing of some commodities.

The NTLP relies on the GDF to provide and approve of the suppliers for all TB commodities and there are no currency restrictions because everything is procured and handled through the donor. The system is regularly monitored, not just be program coordinators, but by Regional Health Management Teams (RHMT), CHMT, MSD, etc., who also monitor commodity stock levels to assist with informing procurement decisions.

As the primary donor, GDF is responsible for the issuance of tenders for all first-line treatments of TB; MSD issues tenders for second-line treatments, and each of these only go to pre-approved suppliers. The WHO is responsible for all procurement of leprosy drugs. The MSD is only responsible for receiving and distributing leprosy drugs but does not procure them. Due to the vertical design of the NTLP in both program operations and donor-funded procurement, the program sees relatively continuous availability of quality-assured drugs at the central, regional and district level. Procurement challenges that NTLP faces include chronic global shortages of some commodities, for example streptomycin, making it difficult to obtain and maintain a consistent supply. Additionally, fixed dose combinations (FDC) of TB medicines have a short shelf life of 24 months which does not always complement procurement plans and shipment schedules.

Forecasting

The LSAT workshop revealed that forecasting exercises for the NTLP are conducted on an annual basis in coordination with the GDF. The process is initiated and facilitated by the NTLP and the information is shared with the WHO for consensus-driven decision making. The information used for forecasting consists of stock on hand and patient data; consumption data is not included. Most of the quantification exercise is reliant upon service statistics from the number of patients recorded over the course of a year. It does not cross check the anticipated need against previous estimated consumption and actual consumption. According to the NTLP, it is estimated that the annual forecasts are relatively accurate in relation to actual consumption with an estimated discrepancy of 10-25 percent annually. However, no long-term forecasting (three years or more) is done by the program. The quantification exercise does not take into account external variability factors or conduct analyses comparing variation across regions, use of standard treatment guidelines, stock out

periods, etc., but rather relies entirely upon the patient data gathered from the facilities to serve as the actual need. An anecdotal statement from one of the facilities where data was collected indicated that the patient data serves to provide the need for all registered patients. However, it is difficult to obtain medicine for new or unanticipated patients because this is not factored into the forecast or distribution plan. The NTLP sets targets for coverage and commodity availability, and the forecasting exercise accommodates these targets into the program projections. In coordination with the NTLP, the GDF provides technical assistance towards forecasting for TB medicines, and the WHO assists with facilitating the quantification of leprosy commodities.

The lower levels (district and regional) assist with the forecasting process in that they gather stock on hand data and patient information in order to inform the national-level quantification process. The NTLP provides donors with information on total country needs, who then coordinate the funding and supply planning for the needed commodities.

The NTLP factors in buffer stock of 100 percent at the central level. However, as validated from the LIAT survey, due to distribution delays and shortages of certain commodities, this is not always maintained or provided as needed to the lower levels. Based on the quantification, the program develops a defined period of ordering and receiving drugs.

Product Use

Discussion during the LSAT workshop revealed that STGs are available for all TB and leprosy commodities, although they have not been uniformly distributed to all health facilities. To ensure the implementation of the STGs, there is a TB and leprosy manual distributed to RTLCs and DTLCs, TB and leprosy registers, as well as patient monitoring forms for TB and leprosy. Pharmaceutical personnel are not always involved in the process of ordering, reporting, and dispensing of TBL drugs, which adds to the variable adherence to STGs. Written guidelines for monitoring and supervising prescribing practices and universal safety precaution guidelines are also available though not widely distributed to all levels. Standard prescribing practices are monitored by DTLCs, but not on a routine basis. Despite these challenges, the introduction of a patient-centered treatment through a system of directly-observed therapy (DOTS) and the use of a fixed dose combination (FDC) has increased overall compliance and adherence. Certain programmatic issues were also cited. These include inadequate staff at health facilities, inadequate funding for transport, and subsequent cost for the patients to travel to the district hospitals to get their medicines. This limits access to drugs and can potentially result in resistance among patients. Presence of some expired pediatric drugs at some of the health facilities, district and the regional level was also cited by LSAT workshop participants.

Product Management

In the LIAT survey, the stock status of ten commodities, six TB and four leprosy drugs, was assessed. Both adult and pediatric drugs were assessed in each category. The TB adult drugs included: 2 FDC-RH (Rifampicin and Isoniazid), 3 FDC-RHE (Rifampicin, Isoniazid and Ethambutal), 4 FDC-RHZE (Rifampicin, Isoniazid, Pyrazinamide and Ethambutal) and Streptomycin injections. The pediatric drugs for TB included: 2 FDC-RH and 3 FDC-RHZ

(Rifampicin, Isoniazid and Pyrazinamide). The leprosy drugs included the adult and pediatric formulations of multibacillary (MB) - Rifampicin and Dapsone and paucibacillary (PB)- Rifampicin, Clofazimine and Dapsone. As shown in the table below, not all facilities managed all of the commodities assessed. Health facilities are only required to manage commodities if they have patients on treatment for that specific drug(s). Almost all facilities managed drugs needed for treating new adult patients- RH and RHZE. However, this was not the case for other commodities, where the range varied greatly. For example, none of the FBO/private facilities managed pediatric formulations of MB- Rifampicin + Dapsone and PB- Rifampicin+ Clofazimine+ Dapsone. The table below shows the percentage of each drug managed by facility type.

Table 5. Percent of Facilities Managing Each Commodity

Commodity Name	Facility Category		
	Public facilities	FBO/Private facilities	Stores
TB Drugs			
2 FDC - RH (peds)- (Rifampicin and Isoniazid)	22%	13%	75%
2 FDC- RH(Rifampicin and Isoniazid)	93%	90%	96%
3 FDC - RHE(Rifampicin + Isoniazid + Ethambutal)	31%	38%	71%
3 FDC - RHZ (peds)- (Rifampin + Isoniazid + Pyrazinamide)	23%	13%	75%
4 FDC - RHZE (Rifampicin 150mg + Isoniazid 75 mg + Pyrazinamide 400mg + Ethambutal 275mg)	97%	95%	96%
Streptomycin injection	30%	33%	71%
Leprosy Drugs			
MB- (adults)Rifampicin + Dapsone	30%	5%	83%
MB- (pediatrics)- Rifampicin + Dapsone	6%	0%	58%
PB- (Adults) Rifampicin + Clofazimine + Dapsone	9%	0%	58%
PB- (pediatrics)- Rifampicin + Clofazimine + Dapsone	4%	0%	38%

A well-functioning logistics system requires staff that has either been hired for or is able to dedicate time for logistics management at health facilities. Figure 3 below shows that the primary person responsible for managing stock in stores is a pharmacy technician, while in FBO/private facilities it was a nurse, and in public facilities it is a clinical officer. Stock management was described as the primary role by 34 percent of the surveyed facility staff, with the prominence of the stock

management role varying according to the type of facility. For instance, 75 percent of staff at stores considered stock management their primary role, while this was true in only 30 percent of public facilities, where staff is responsible for service delivery in addition to stock management.

Figure 3. Primary Person Responsible for Stock Management at Facilities
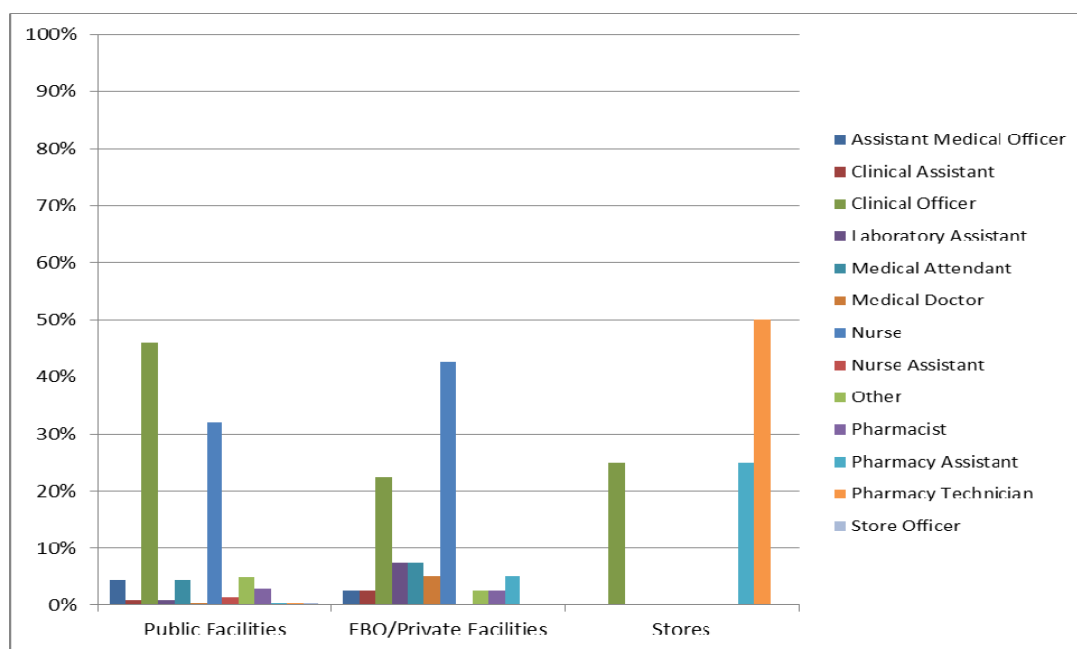
Stock Availability

The most important outcome of a logistics system is the availability of stock at the health facility. Stockouts in any health system represent a critical failure of the logistics system. They can result in patients' inability to obtain crucial medicines and thereby put them at risk of treatment failure, and reduce their level of confidence in the health system. Even where stockouts are not currently high, facilities with too little stock at the time of the visit are likely to stock out or require an emergency order before they receive their next routine order.

While stockouts demonstrate one outcome of a poorly functioning logistics system, overstocks are another important indicator of a logistics system's lack of effectiveness. Overstocks put products at greater risk of expiration or damage before they can be distributed and used. The products also take up storage space, and other facilities may have inadequate stocks at the same time, indicating a need for redistribution.

The LIAT survey collected data about stockouts on the day of the visit and in the last six months, and measured the duration of stockouts during a recent six-month period. The stockout findings are displayed by each commodity and include analyses of the following indicators:

- Percentage of facilities that manage a given TBL commodity and were experiencing a stockout on the day of the visit,
- Percentage of facilities that manage the TBL commodity and experienced a stockout during the six-month period preceding data collection (i.e., February – July, 2011) (based on stock keeping records),

- Average duration of stockouts (based on stock keeping records).

Since information about stockouts in the previous six months (and their durations) was based only on facilities where stock keeping records were available and updated, the results on these indicators are likely to be underestimates of the true stockout situation. In addition, even in those facilities where stock keeping records were available, they were not always consistently filled out, so some stockouts may have gone unrecorded.

Mean months of stock on hand on the day of the visit could not be calculated since TBL commodities are only managed at facilities that currently have or have had patients on the selected drugs during the previous six months. In addition, commodities are only managed for specific patients on those drugs.

Stockout on the Day of the Visit and in the Last Six Months

As noted previously, stockouts are the most serious negative outcome in a logistics system. The illustrative table below shows LIAT data on the percentage of facilities that managed TBL commodities but were experiencing a stockout on the day of the visit and/or in the previous six months. With the exception of a few commodities (3 FDC-RHZ, PB adult formulation and streptomycin), higher proportions of both public and private facilities experienced stockouts during the previous six months as opposed to only on the day of the visit. However, some of the stockouts can be attributed to health facilities not having patients on treatment for the entire previous six months.

The assessment revealed that on the day of visit, the proportion of facilities stocked out of 2 FDC-RH, one of the first-line treatment drugs for TB, ranged from four to eight percent, compared to 13-21 percent during the previous six months. Overall, the availability for adult first-line treatment drugs for TB (4 FDC-RHZE and 2 FDC-RH) fared much better in comparison to retreatment drugs for TB (3 FDC-RHE and streptomycin). During the time of the assessment, there was a national level stockout of streptomycin. As the results in Table 6 below show, almost 60 percent of stores were stocked out of streptomycin, both on the day of the visit and during the previous six months. Similarly, almost half of the public facilities were also stocked out of streptomycin on the day of the visit. In cases of stockout, retreatment patients are given first-line treatment to the standard treatment guidelines, which is concerning as this can lead to drug resistance which then necessitates more expensive therapy.

Twenty-five percent of public facilities and stores were also stocked out of 2 FDC-RH for pediatric treatments on the day of the visit. In addition, almost a third of public facilities, 40 percent of private facilities and half of the stores surveyed were stocked out of pediatric 3 FDC-RHZ on the day of the visit. In cases of stockouts of pediatric treatments, health facility staff reported cutting up adult treatment pills in order to provide drugs for pediatric patients, which can potentially lead to toxicity. Overall, stores reported having more stock outs, both on the day of the visit and in the past six months in comparison to stockouts reported at public facilities and FBOs for TB commodities.

Similar to TB, only those facilities that have patients with leprosy manage those commodities. With the exception of MB for adults, none of the FBO/private facilities manage leprosy drugs. A higher percentage of public facilities and stores experienced stockouts of PB than of MB on the day of visit, at 28 percent in comparison to 13 percent at public facilities, and 36 percent in comparison to

20 percent at stores. The table below illustrates the stockout rates on the day of the visit and in the last six months for products assessed, by facility type.

Table 6. Percentage Stockouts on Day of Visit and in the Last Six Months

Commodity Name	Stockouts	Facility Category		
		Public facilities	FBO/Private facilities	Stores
TB Drugs				
2 FDC - RH (peds)- (Rifampicin and Isoniazid)	**Stockout on Day of Visit**	23%	0%	28%
	Stockout in Last 6 Months	15%	20%	22%
2 FDC- RH(Rifampicin and Isoniazid)	**Stockout on Day of Visit**	8%	6%	4%
	Stockout in Last 6 Months	21%	14%	13%
3 FDC - RHE(Rifampicin + Isoniazid + Ethambutal)	**Stockout on Day of Visit**	**16%**	**7%**	**53%**
	Stockout in Last 6 Months	28%	13%	41%
3 FDC - RHZ (peds)- (Rifampin + Isoniazid + Pyrazinamide)	**Stockout on Day of Visit**	**31%**	**40%**	**50%**
	Stockout in Last 6 Months	15%	0%	33%
4 FDC - RHZE (Rifampicin 150mg + Isoniazid 75 mg + Pyrazinamide 400mg + Ethambutal 275mg)	**Stockout on Day of Visit**	**9%**	**11%**	**4%**
	Stockout in Last 6 Months	21%	11%	30%
Streptomycin injection	**Stockout on Day of Visit**	45%	31%	59%
	Stockout in Last 6 Months	29%	15%	59%
Leprosy Drugs				
MB- (Ad)Rifampicin + Dapsone	**Stockout on Day of Visit**	**13%**	**0%**	**20%**
	Stockout in Last 6 Months	25%	0%	30%
MB- (Peds)- Rifampicin + Dapsone	**Stockout on Day of Visit**	8%	N/A	36%
	Stockout in Last 6 Months	23%	N/A	43%
PB- (Ad) Rifampicin + Clofazimine + Dapsone	**Stockout on Day of Visit**	28%	N/A	36%
	Stockout in Last 6 Months	44%	N/A	57%
PB- Peds)- Rifampicin + Clofazimine + Dapsone	**Stockout on Day of Visit**	25%	N/A	11%
	Stockout in Last 6 Months	13%	N/A	33%

The average duration of stockouts is defined as how long on average, in number of days, stockouts lasted. For those that experienced stockouts in the previous six months, the duration of stockouts varied according to product and facility type. As shown in Table 7 below, for most products, public facilities experienced longer stockouts than FBO/private facilities, which indicates a deficiency in the current system in getting adequate quantities of stock needed to serve patients at public facilities. For instance, on average, pediatric formulation of 2 FDC-RH was stocked out for 93 days at public

facilities in comparison to 3 days at FBO/private facilities. Similarly, MB for adults was stocked out at public facilities for an average of 72 days, while the FBO/private facilities did not experience any stockouts during the same time frame.

Table 7. Average Duration of Stockouts (days)

Commodity Name	Facility Category		
	Public facilities	FBO/Private facilities	Stores
TB Drugs			
2 FDC - RH (peds)- (Rifampicin and Isoniazid)	93	3	100
2 FDC- RH(Rifampicin and Isoniazid)	67	61	22
3 FDC - RHE(Rifampicin + Isoniazid + Ethambutal)	95	77	89
3 FDC - RHZ (peds)- (Rifampin + Isoniazid + Pyrazinamide)	83	0	93
4 FDC - RHZE (Rifampicin 150mg + Isoniazid 75 mg + Pyrazinamide 400mg + Ethambutal 275mg)	59	49	37
Streptomycin injection	65	100	99
Leprosy Drugs			
MB- (Ad)-Rifampicin + Dapsone	72	0	31
MB- (Peds)- Rifampicin + Dapsone	84	N/A	91
PB- (Ad) Rifampicin + Clofazimine + Dapsone	137	N/A	69
PB- (peds)- Rifampicin + Clofazimine + Dapsone	90	N/A	80

Logistics Management Information System (LMIS)

A functioning LMIS is the engine needed in order for any logistics program to succeed and for commodities to be available at the health facility level. Assessment findings revealed that some districts have developed their own data collection forms. The NTLP has an LMIS in place to capture some of the essential logistics data from facilities. Stock keeping records such as store ledgers are available at the health facility level. Other LMIS forms such as combined requisition and issue note, and drug calculation form are available at the district and the regional level to monitor and manage logistics data. While some data does exist, consumption data is not collected and is therefore not available. The system is designed to track patient registers and morbidity data, which serve as the point of reference for quantification and program decision making.

According to the LSAT workshop participants, essential logistics data at the health facility level is not easily available and if found, is difficult to decipher. The NTLP is designed as a vertical program as opposed to operating within the national Integrated Logistics System (ILS). This presents both challenges and efficiencies for the program. The reporting system for the NTLP is such that the facility level does not report directly to the district to receive commodities, but rather the DTLC is expected to visit all of the facilities under his purview on a monthly basis in order to collect data and distribute TBL commodities. During the monthly visit, the DTLC gathers data on stock on hand, total number of patients and treatment regiments, and from there the DTLC aggregates the data and information into a report and sends it to the RTLC. The RTLC then compiles all of the reports from the districts and creates a regional report which is submitted to the NTLP. The districts submit reports to the regions on a quarterly basis, and the regions submit reports to the national program on a quarterly basis. This information is used for national level programming support, quantification and forecasting efforts, and supply planning. The forms that are used for reporting are the drug calculation form, the patient notification form, the stock position form and the treatment outcome forms.

While the data that is aggregated and sent to the central level includes patient data that informs the program on the number of TB and leprosy patients in-country, there is a lack of data visibility around routine logistics information from the facility level. For example, stock status information to demonstrate whether facilities are stocked out, have adequate stock, etc., is not available. The patient data provides an overall illustrative picture of the TB and leprosy commodity needs broken down by district, but not by individual facility. The current system does not monitor reporting rates, however, the RTLC are meant to provide supportive supervision to the district, and the DTLC to the health facility. It should be noted that this supportive supervision is not routinized, and not all facilities receive supervision visits on drug management. Essential logistics data is often lost in the reporting cycle, and the system currently operates on a paper-based system until it reaches the central level. The central level manages the data using Excel and Access databases.

The NTLP primarily operates and supervises its own program. There is also indirect supervision from donors such as the WHO and GDF who provide occasional supervision visits and assessments on the information flow and system operations in order to provide recommendations to the program. The logistics information gathered on a regular basis is also
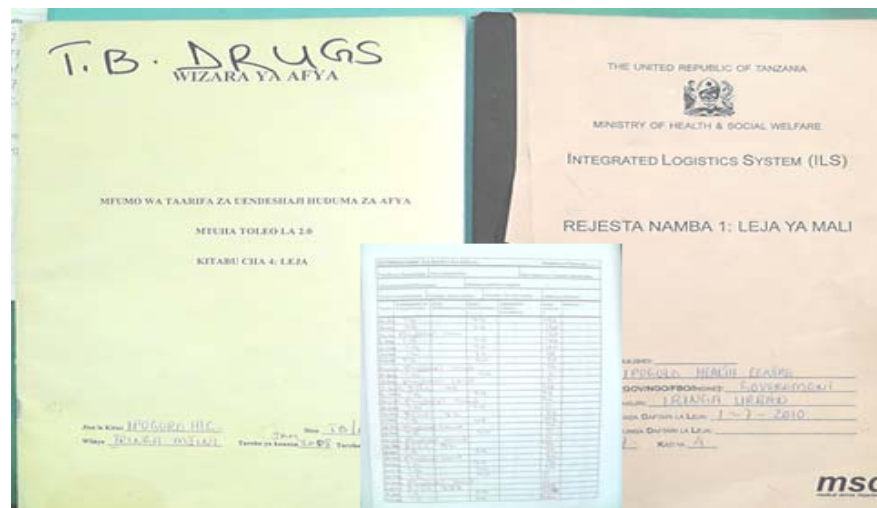
Various Ministry of Health Logistics Records for System Monitoring.

used to monitor and evaluate program performance through case notifications, and serves to address chronic stock outs in particular districts or regions. The information system supports decisions around forecasting, procurement, inventory management and how much to resupply particular districts or regions. Feedback mechanisms for system operations are informal, through telephone calls, meetings and supervision visits. According to the LSAT participants, there is a mechanism in

place at the facility level to cross check total quantities received from the district against total quantities issued to patients. This data is also checked against service statistics on a quarterly basis by the regional and central program coordinators.

The overall system strengths within the NTLP are that there is a clearly designated reporting mechanism in place from the district to the regional level. However, the district to facility level sees more variance in reporting and distribution, and seems to lack uniformed guidelines across the country. The health facility level does not have logistics reporting tools. While there is a clear reporting mechanism in place from the district level up, there are reporting delays, which in turn affect timely receipt of commodities and distribution to the facilities. The current reporting tools do not include data on losses and adjustments and quantities used, so this information is not captured anywhere in the system, making it difficult to determine actual consumption rates. Health facilities for the most part manage effective patient registers, including Rifampicin DOT registers used to capture quantities of drugs dispensed by patient, however, logistics data on actual consumption is not recorded in the system. Available tools do provide information on total number of patients by regimen at the district and the regional levels, which then forms the basis of calculation for forecasting and supply planning. The reporting and calculation tools are also widely available at the district and regional levels, though at times, both the district and the region have developed their own reporting and ordering tools.

The findings from the LIAT survey further validate the LSAT findings. The facility staff surveyed was asked what kind of stock keeping forms they used to manage their commodities. Store ledgers were most commonly used across all types of facilities, with 100 percent of stores, 58 percent of public facilities, and 48 percent of FBO/private facilities using them for stock management. As seen in Figure 4 below, bin cards were also used to a lesser extent by facilities.

Figure 4. Types of Stock Keeping Records Used at Facilities
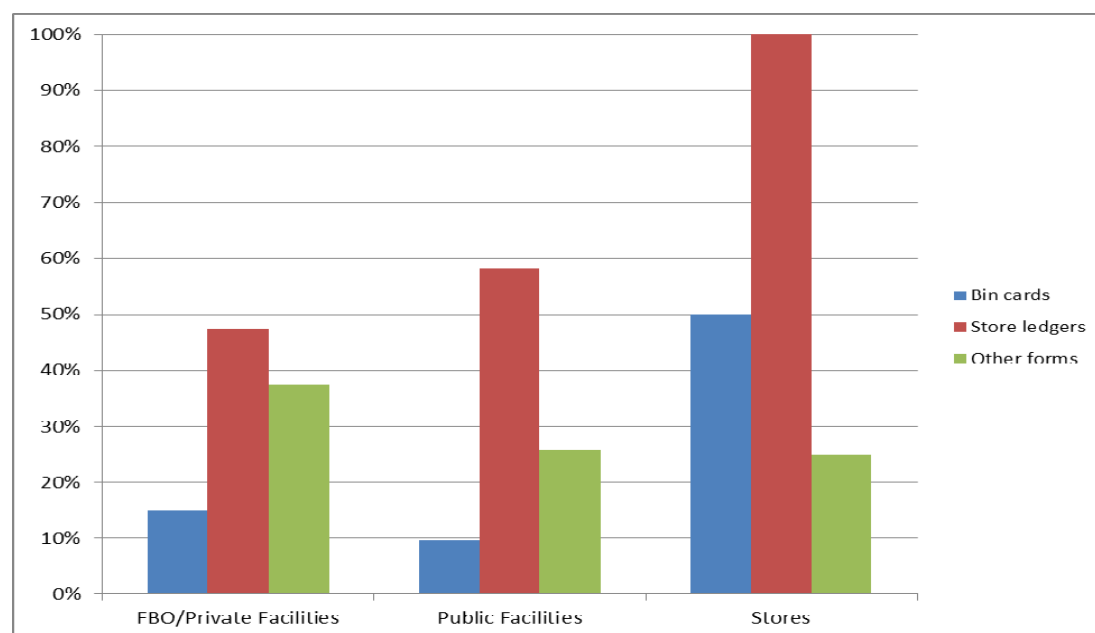
The importance of keeping and regularly updating stock records cannot be overemphasized as a means of enabling proper logistics management. After checking whether stock keeping records were

available for each managed product, data collectors checked whether the available stock keeping records were updated in the previous 30 days. This time period was used as a proxy for stock keeping records being up-to-date. If the last balance noted on the stock keeping record indicated a stockout and the commodity was still stocked out, the stock keeping record was considered updated regardless of whether an entry was made within the last month. Figure 5 below illustrates data on the percentage of facilities with stock keeping records available and of those, how many were updated for the drugs that they managed, by facility type. As seen in the chart, a larger proportion of facilities had available and updated stock keeping records for leprosy commodities than for TB commodities.

Figure 5. Percentage of Facilities with Available and Updated Stock Keeping Records
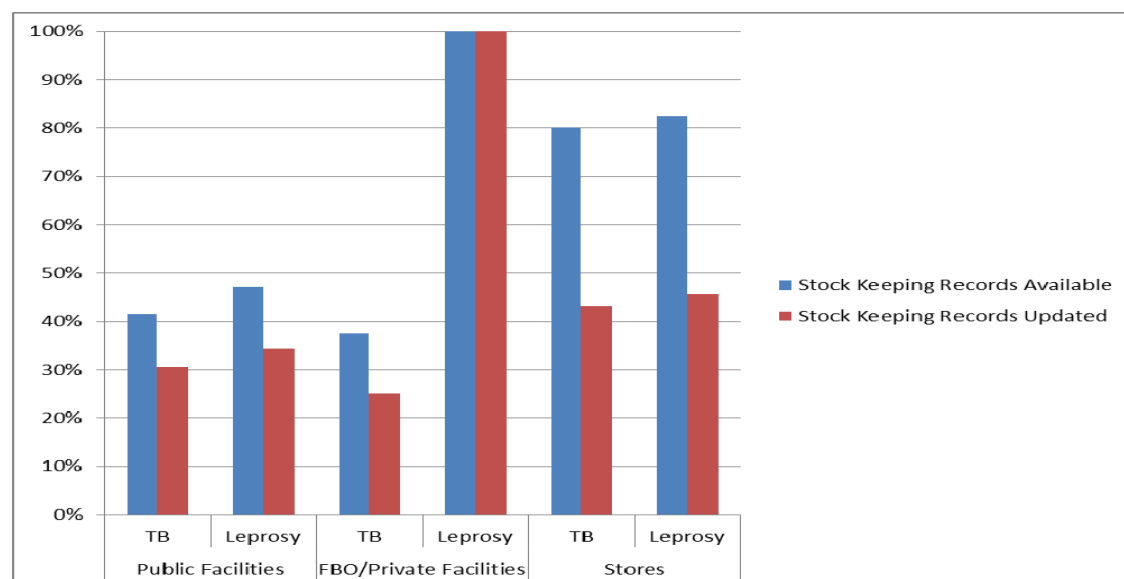
The LIAT assessment team also looked at the geographical data of stock outs on the day of visit, stock outs in the last six months, stock keeping records availability and updating, up-to-date records, distribution/delivery of commodities. For example, Figure 6 below shows that most facilities in the Dar es Salaam region that collected MB from the district also experienced a stockout of MB during the previous six months, further demonstrating the importance of having districts (or MSD where feasible) deliver to the health facilities. This also indicates that proximity to a higher level storage facility (MSD, the region, or the district) is not a factor in commodity availability. Not managing commodity in the legend refers to facilities that are not currently managing this particular commodity (MB, in this case), but do manage at least one other TB or leprosy commodity selected for the assessment.

Figure 6. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Dar es Salaam Region
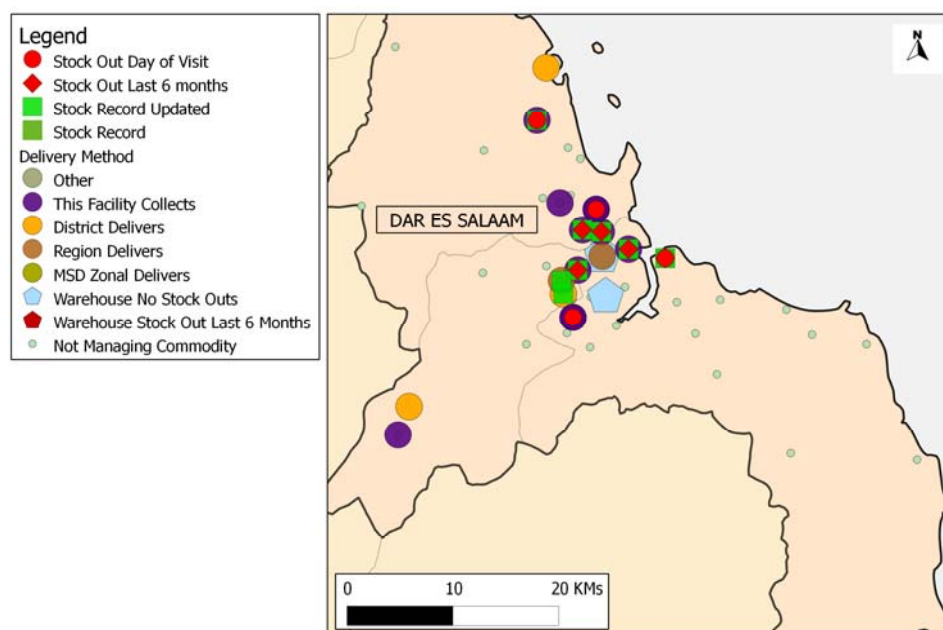
While keeping updated stock keeping records is important, if the records are not accurately maintained, they serve little purpose. Generally, there is a direct correlation between health facilities that keep and regularly update store ledger books or bin cards and accuracy in maintaining records.

To assess the accuracy of stock keeping record information, a comparison was made between the recorded stock balance in the store ledger and the physical inventory on the day of visit for those facilities with updated stock keeping records. A stock keeping record was considered accurate if the recorded stock balance differed from the physical inventory by +/- 10 percent. This analysis could be completed only for facilities and drugs with stock keeping records available and in use, so the sample size is quite low (94 facilities), and the results should be interpreted with caution.

As Table 8 below shows, less than a third of public and private facilities maintained accurate stock keeping records, while stores showed a relatively higher rate of accuracy, with 64 percent maintaining accurate stock keeping records.

Table 8. Percentage Facilities with Accurate Stock Keeping Records

Facility Category	Accurate Stock Keeping Records
Public Facilities	32%
FBO/Private Facilities	23%
Stores	64%

Ordering and Reporting

The current system requires DTLCs to resupply commodities to health facilities based on the total number of TB patients. However, the LIAT survey found that the system for receiving commodities

from the district is not standardized, and this method for resupply was not happening at all facilities surveyed. This was reflected in the fact that facilities reported using a variety of different forms to order commodities from the higher level (Figure 7 below) and that there was no standard frequency for this ordering (Figure 8 below). Approximately 20 percent of health facilities and FBOs/private facilities reported ordering on a quarterly basis while another 25 percent of public facilities reported never ordering commodities. Qualitative results from the LSAT portion corroborated these results, and shed light on the fact that many times facilities reported picking up the products themselves, or worse, patients had to pick up their own medicines and take them to the facilities for safe keeping.

Figure 7. Forms Used to Order Commodities from the Higher Level
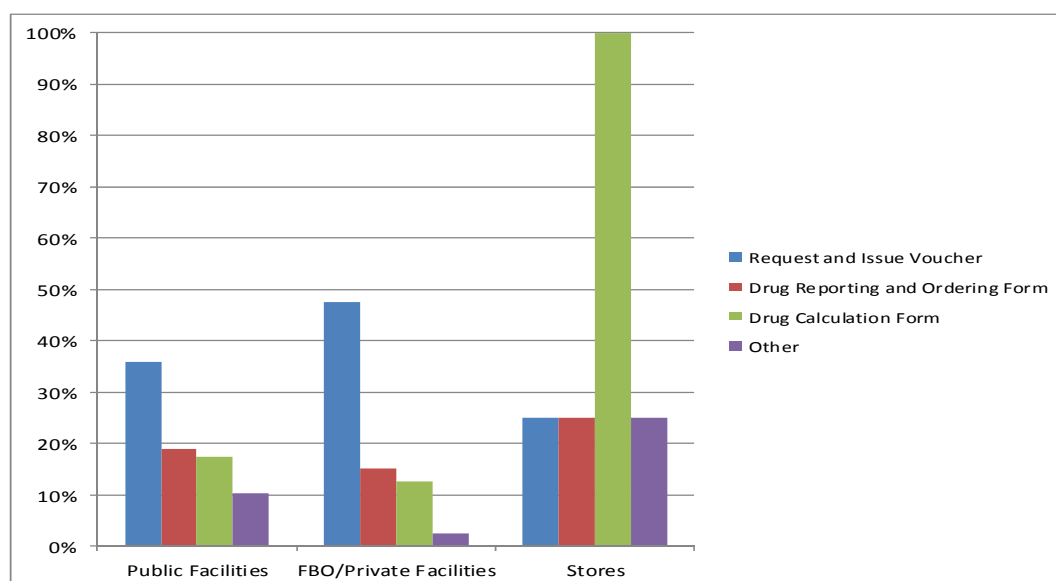
Figure 8. Frequency of Sending Ordering Forms to the Higher Level
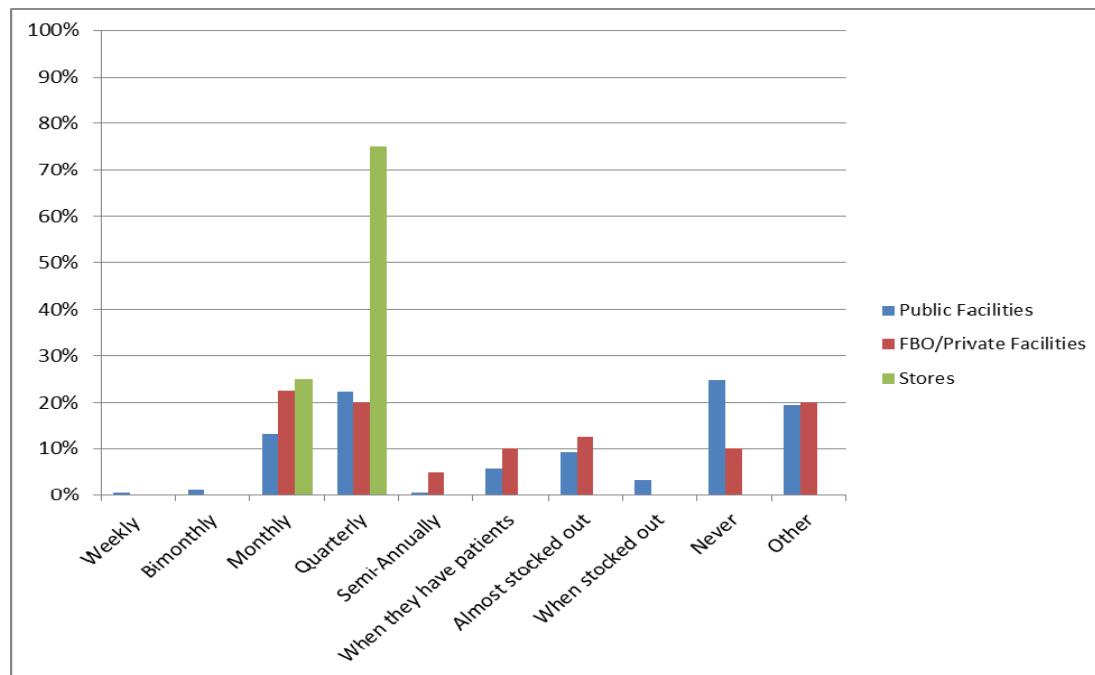
Similarly the LIAT assessment results indicate that the current system is fluid in terms of reporting stock information from the health facilities to the district level. Figure 9 below shows that the majority of public facilities and FBO/private facilities (58 and 43 percent, respectively) reported never having sent a report to the higher level. This may be explained by the fact that it is the responsibility of the DTLC to visit facilities and collect stock information on a monthly basis. However, the fact that some facilities did report sending reports to the higher level, and at different intervals, shows that there is some confusion about the operations of the current system. As per system specifications, the majority of the district and regional pharmacy stores (75 percent) reported submitting their reports to the higher level on a quarterly basis.

Figure 9. Frequency of Sending Reporting Forms to the Higher Level
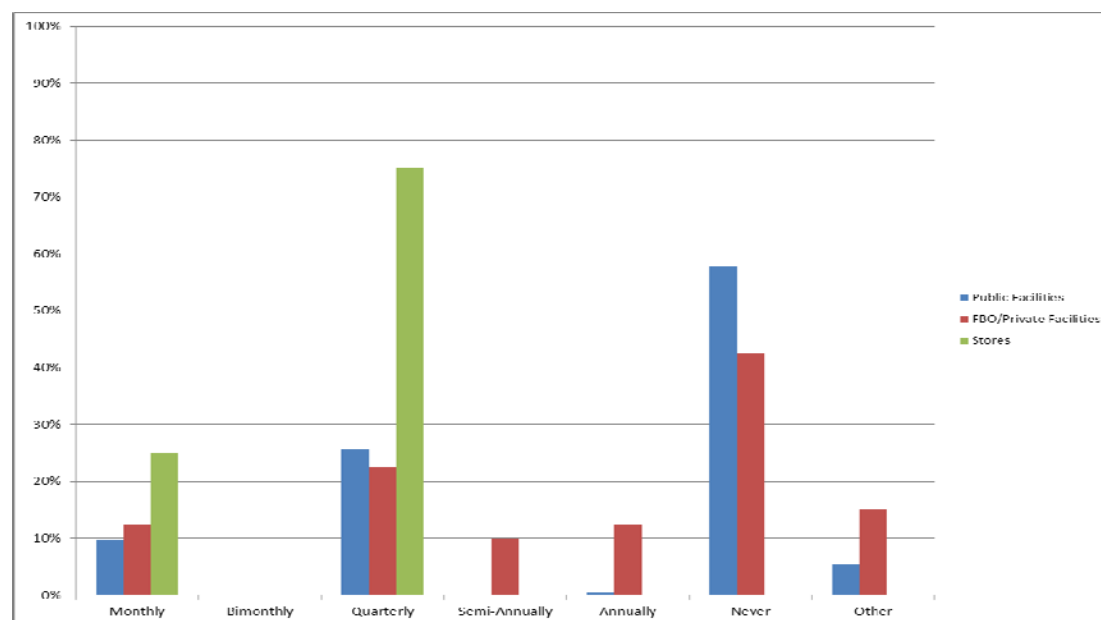
Product Resupply and Order Lead Time

During the LIAT exercise, facilities were surveyed to see how resupply quantities of TBL commodities were determined, and by whom. As Table 10 below shows, the majority of FBO/private facilities and stores reported determining their own resupply quantities, while in public facilities determination of resupply quantities was split pretty evenly between the facility itself and a higher-level facility. A higher-level facility is defined as the level above the facility being interviewed. For example, for the health facilities, the district store is considered the higher level, while for the district store, the regional store is considered the higher level, and for the regional store, the MSD zonal warehouse. LSAT participants and data collectors also reported that many times health facilities also tend to request resupplies verbally—by speaking to their DTLCs over the phone without completing any request forms. At the health facility level, resupply quantities are based on total number of patients on a specific treatment, not on logistics data. However, it was reported anecdotally that by basing resupply on patient caseload, facilities are not always prepared to treat new patients. In such cases, patients were either sent to the district hospital to collect their medicines or health facility staff traveled to the district hospital. Though both district and regional hospitals are supposed to maintain buffer stock, this was not the case.

Table 10. Breakdown of Who Determines Resupply Quantities

Facility Category	Public Facilities	FBO/Private Facilities	Stores
The facility itself	51%	73%	75%
Higher-level facility	52%	30%	25%
Other	1%	0%	0%

As Figure 10 below shows, the overwhelming majority of public and private facilities determined their resupply quantities based on the number of TB cases on treatment, while one half of stores determined quantities to order based on the total number of TB cases and the other half based on a formula.

Figure 10. How Resupply Quantities are Determined
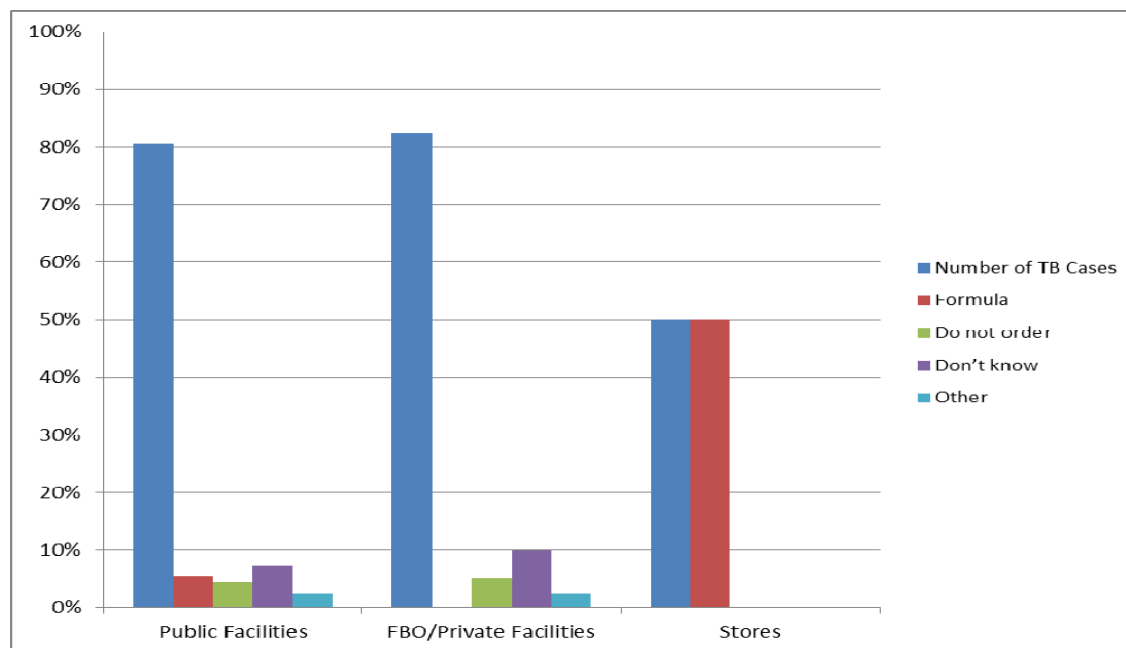
Facilities were also surveyed to determine how soon after ordering TBL commodities those commodities were received by the facility. As seen in Figure 11 below, a large majority of facilities experienced an average lead time of less than two weeks for their TBL commodities. Many health facility staff explained that turnaround time between verbal ordering and receipt of products is often within a few days.

Figure 11. Average Lead Time of TBL Commodities
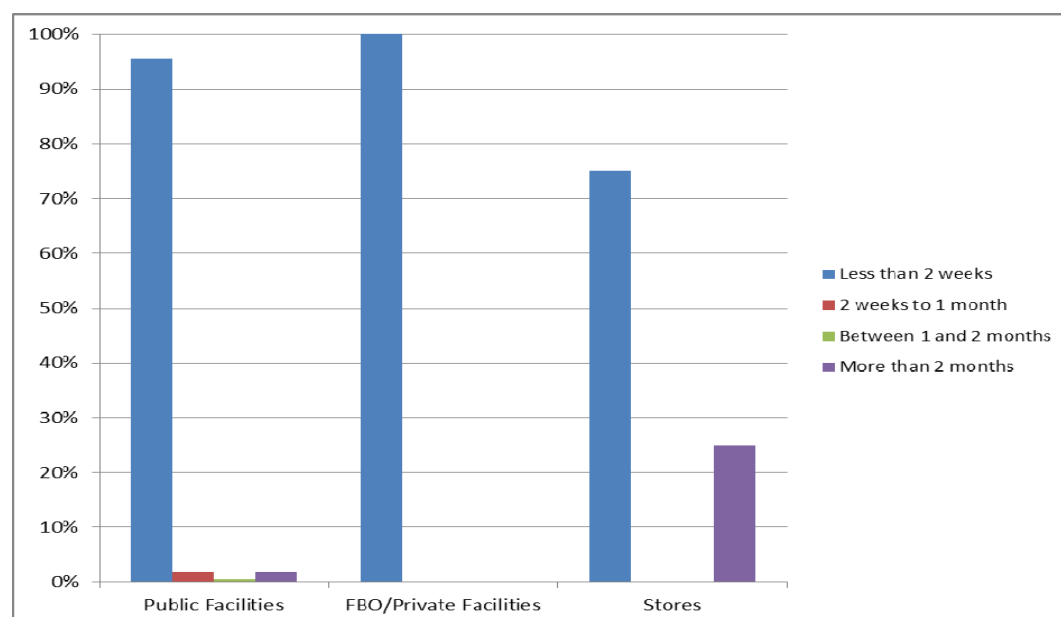
Inventory Control Procedures

During the LSAT workshop, participants mentioned that the NTLP maintains guidelines and established policies for minimum and maximum stock levels, and these guidelines are expected to be adhered to at each level of the supply chain. These guidelines however have not been widely distributed to all levels of supply chain. Table 11 below shows the NTLP inventory controls for the each level. During the LIAT survey, data collectors did not report seeing these guidelines

Table 11. Inventory Controls for the Each Level

Supply Chain Level	Minimum-Maximum Stock Level
Central Level (MSD)	12-24 Months of Stock
Regional Level	3-6 Months of Stock
District Level	3-6 Months of Stock
Service Delivery Point (Health centre/dispensary)	2-3 Months of Stock

While the program has established minimum and maximum inventory levels, most health facility staff are not aware of them and don't maintain inventory based on these levels. Instead, inventory is maintained based on total numbers of patients on treatment by regimen.

According to the LSAT participants, the inventory control levels are reviewed every five years to assess system functionality and efficiency. There are no specific guidelines for redistribution when a facility is overstocked, however when necessary, redistribution is often done on an informal basis by the DTLC. The program guidelines indicate that all products should be stored according to first-

expired first-out (FEFO), however this is not always the case. Expired products are often discarded without record as there is not currently a system for documenting losses and adjustments. Resupply quantities are calculated at all levels using patient registers to assess the number of TB and leprosy cases and the stock on hand levels for each facility managing the commodities. There are no guidelines for emergency ordering; rather the facilities request DTLCs for more stock or facility staff travel to the district store to order more stock.

While the central and regional levels generally keep good storage and inventory practices, there are no universally used standard operating procedures for inventory management, including tracking losses and adjustments, what to do with oversupply and redistribution, and established parameters for emergency ordering. Both a push and a pull system are implemented together at different levels of the supply chain.

It should be noted that, based on the maximum stock levels as indicated in NTLP's inventory control guidelines (see Table 11), the total length of the national pipeline is 39 months (calculated by adding the maximum stock levels in each tier of the system). Assuming FEFO and max-min levels are adhered to, this is the amount of time it would take a commodity to travel through all distribution channels from the time it enters the system at MSD Central to the time it is dispensed to a client at a facility. Because the shelf life of most TBL commodities is from 24 to 36 months from date of manufacture, adherence to the established system inventory control parameters would result in expiry of most medicines before they reach the facility.

Transport

The assessment also looked at how TBL commodities were transported to facilities. LIAT survey found that the majority of facilities (66 percent of public facilities, 63 percent of FBO/private facilities and 50 percent of stores) collected their own supplies from the higher level, even though the current logistics system is designed for DTLCs to directly deliver commodities to the health facilities. Smaller numbers of facilities (42 percent of public facilities, 40 percent of FBO/private facilities and 25 percent of stores) had their TBL commodities delivered to them by the district. Figure 12 shows this breakdown.

Figure 12. Breakdown of Who is Responsible for Transporting TBL Commodities to Facilities
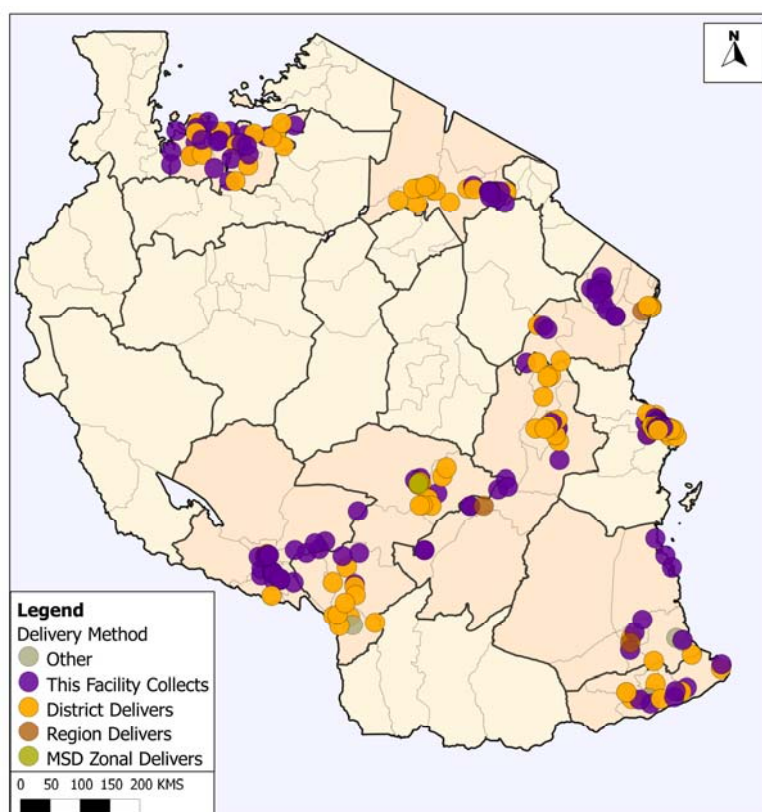
The map below further illustrates facilities where health facility staff are collecting their own resupplies and facilities where the DTLC is delivering commodities.

Figure 13. Delivery Method Used for Resupplying TBL Commodities
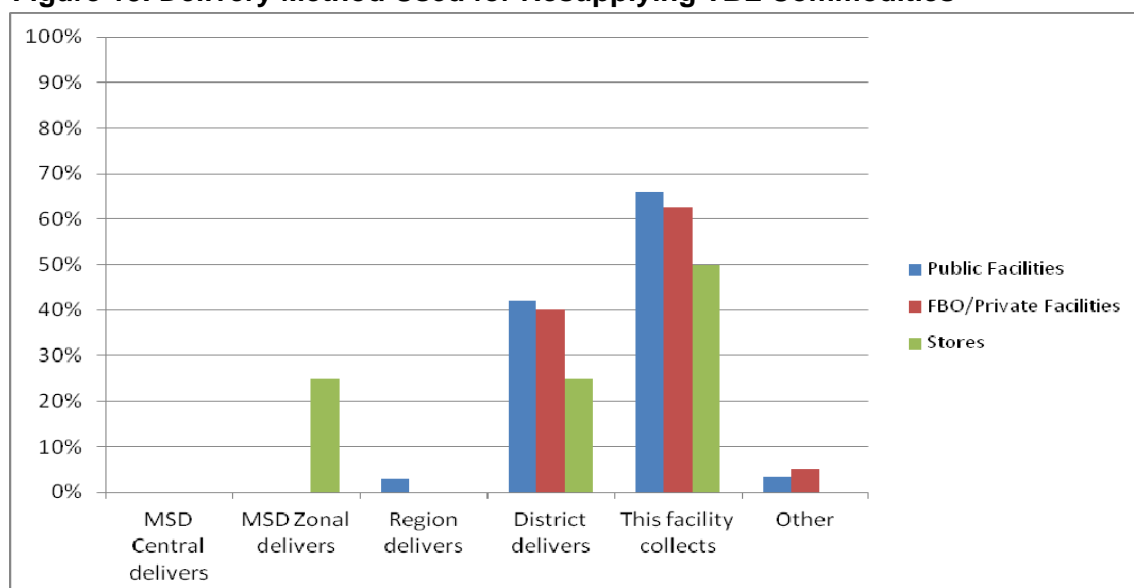
A correlation was found between the mode of transportation for commodities and stockouts of those commodities. As noted earlier, the current system requires DTLCs to resupply commodities to health facilities, however many times facility staff collect their own resupplies, resulting in additional cost and burden on facility staff. Since facility staff are also responsible for service delivery, it is also likely that they don't always have the time to travel to the district to collect their resupplies, potentially resulting in stockouts, and not being able to provide the needed drugs to patients in a timely manner. For three products, 2 FDC-RH, 4 FDC-RHZE and MB (adult formulation), a significant percent of those facilities that had experienced stockouts in the last six months were responsible for collecting their own product. As Figure 14 below shows, over 50 percent of facilities that experienced stockouts of these three products in the last six months reported that they collected their own commodities from the higher level.

Figure 14. Percentage of Facilities With Stockouts in the Last Six Months that Collect their Own Commodities from the Higher Level
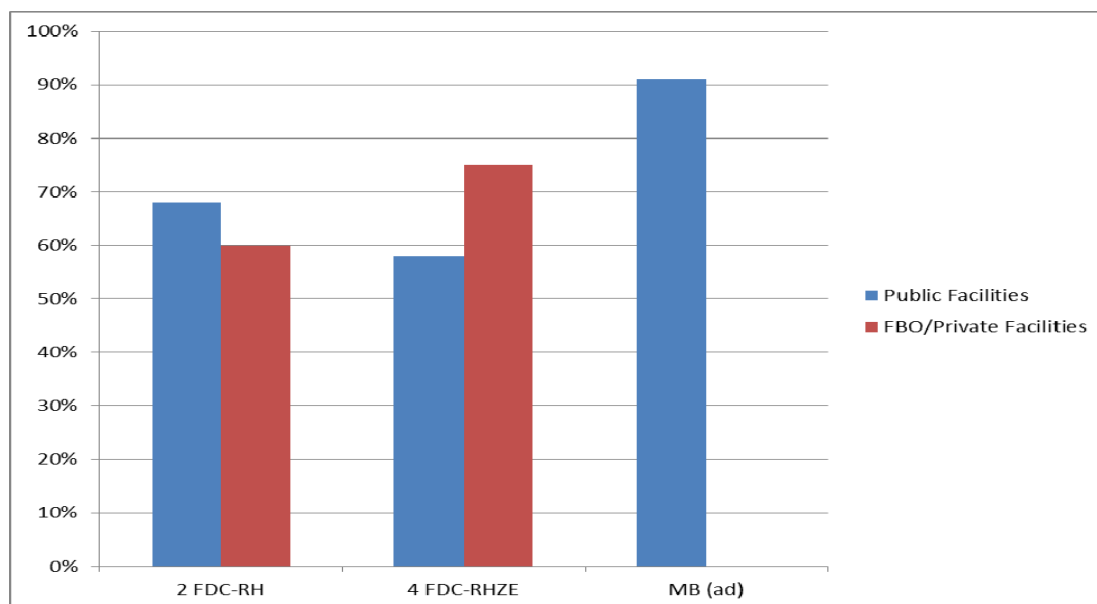
The map below illustrates that the distribution of TB and leprosy commodities from the district to the facilities varied widely; assessment results show that this has an impact on stock out rates at facilities. For example in the Mwanza region, facility staff that travel to the district themselves to collect TBL commodities were highly likely to have been stocked out in the last six months. The likelihood of stock out is higher at facilities where staff must go pick up commodities themselves, regardless of proximity to the regional or district store.

Figure 15. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Mwanza Region
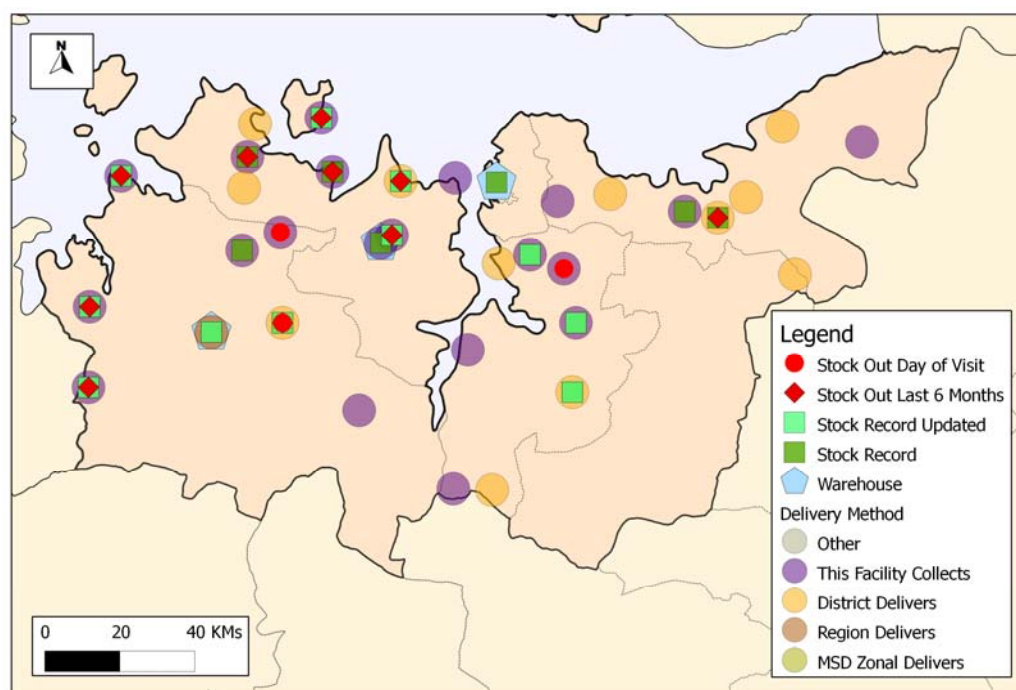
Figures 16 and 17 below show variation in distribution of TBL commodities to the health facilities. In Mbeya region, a high percentage of facilities picked up RHZE from the district hospital instead of the DTLC delivering to the facility, per program design. As mentioned earlier, this creates an additional burden on facility staff and can result in stockouts and in patients not being able to receive treatment on time. In Iringa region, DTLC delivered RHZE to the majority of the facilities. Majority of these facilities did not maintain stock keeping records to determine occurrence and duration of stockouts. Similarly, in Morogoro region, the DTLC delivered to the majority of the health facilities surveyed. It is interesting to note that the majority of those facilities that picked up RHZE from the district hospital themselves were stocked out on the day of the visit.

Figure 16. Stockouts as Related to Stock Card Use and Delivery Methods for RHZE: Mbeya, Iringa & Morogoro
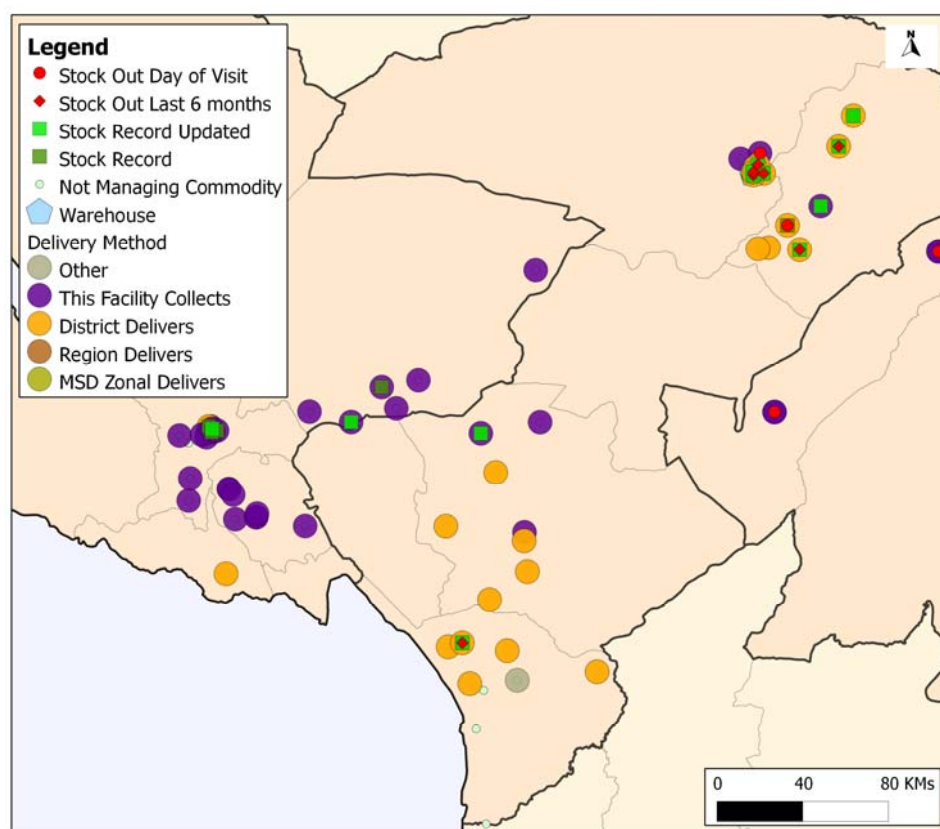
Figure 17 illustrates that approximately half of the facilities in Lindi and Mtwara region did not use stock cards to manage RH. The results also show that there is no difference in stock out rates between facilities that pick up RH from the district and have stock cards available and those where the DTLC delivers RH and have stock card available. These findings are contrary to what was seen in some of the other regions, where stock availability was greater when the DTLC delivered commodities to the health facilities and the facilities also maintained stock cards. These findings demonstrate the variability in performance of health facilities which is impacted more by district level management of TBL commodities than by the regional or zonal level stock availability.

Figure 17. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Lindi and Mtwara Regions
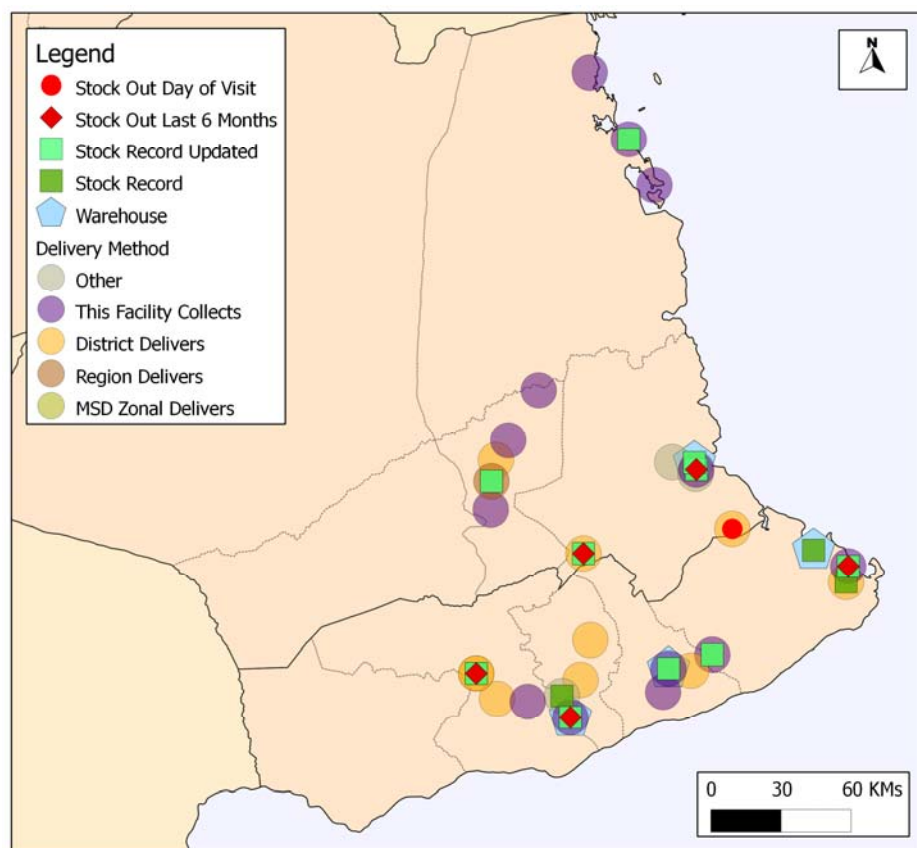
Use of different delivery methods for resupplying TBL commodities in the Tanga region can be seen in the map below. Approximately, 90 percent of the facilities that are located further away from the regional pharmacy store are picking up their own resupplies of MB, while the DTLC is delivering primarily to those closest to the resupply point. As noted earlier in the report, based on the current system design, health facilities should not have to travel to the district to pick up commodities; instead the DTLC should resupply commodities on a monthly basis. However, if DTLCs are able to deliver only to limited number of facilities, priority should be given to facilities that are farther away from the resupply point. This map demonstrates lack of delivery to majority of the remote facilities.

Figure 18. Delivery Method Used for TBL Commodities in Tanga Region
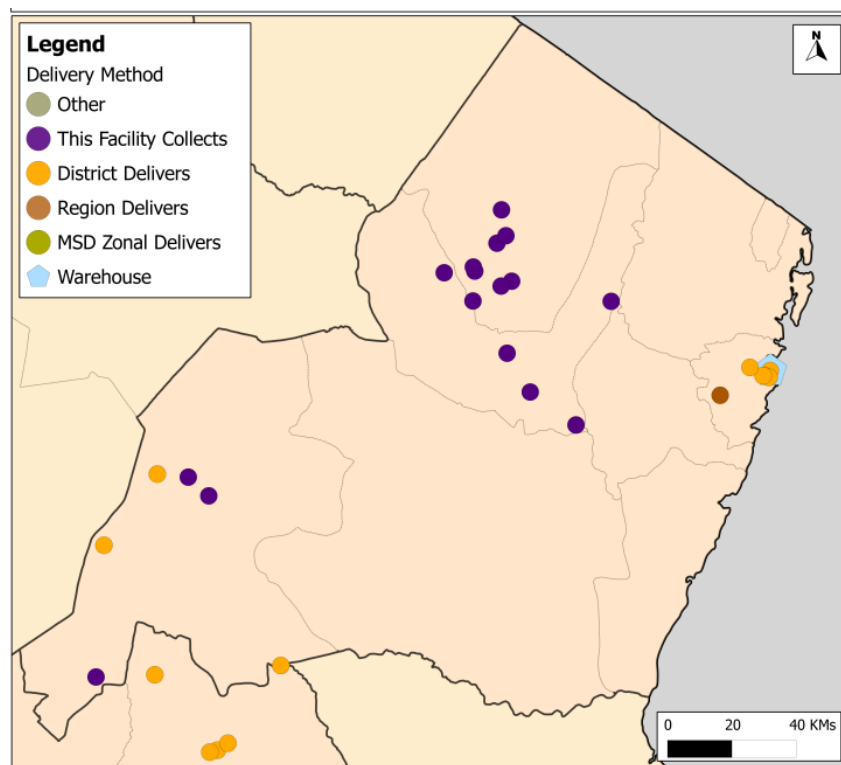
The LSAT workshop revealed that due to the vertical design of the TB and leprosy program, most of the transport needs at the lower levels have been addressed through the procurement of motorcycles to service the district levels in supervision and distribution to the facility level. The transport and distribution system for TB and leprosy commodities in Tanzania from the central level to the zonal level is provided and managed by MSD. On a quarterly basis, MSD vehicles deliver TBL commodities to the regional pharmacy store. From the regional to the district level, supplies are usually collected using a vehicle from the District Medical Office (DMO) office. From the district to the facility level, the DTLC delivers commodities to health facilities. However, as seen in Figure 14 above, LSAT participants reported that many facility staff also come and pick up the commodities from the district themselves. In a few instances, patients themselves were also requested to pick up commodities from the district hospital. In such cases, neither the health facility staff nor the patients are reimbursed for any transport costs they incur. While written procedures are in place to specify what type of distribution system should be used to distribute products between each level, they are not very clear. As shown earlier in Figure 1, distribution of TB and leprosy commodities, from the central to zonal, and from the zonal to regional level, is shared with other essential medicines. However, distribution from the region to the district, and to the health facilities, is managed and implemented by the RTLC and DTLC, and only TB and leprosy commodities are transported together at these levels. The program operates on an integrated distribution system until the regional level and then a vertical distribution system from the region down to the health facilities.

The NTLP has program-specific motorcycles which are kept and maintained at the district level, funded by program-specific support. While the program budget has line items for vehicles and vehicle maintenance, LSAT discussion revealed that there is a chronic shortage of funding for fuel, spare vehicle parts, maintenance, per diem for facility supervision and salaries for drivers, and these insufficiencies continue to serve as a bottleneck for system implementation. All vehicle purchases and maintenance are funded by the GLRA. However, there is not sufficient support for transport and distribution. Furthermore, GLRA has plans to phase out this vertical support. An ongoing challenge faced with transport and distribution is that due to the geographical location of facilities, a motorcycle is not sufficient to distribute the goods to remote facilities, some of which are up to 300 kms away.

Training and Supervision

A well-functioning logistics system is dependent upon well-trained staff members with the knowledge and skills to use logistics forms and reports correctly. In the LIAT survey, facility staff was also asked about the training they had received in filling out logistics forms. As seen in Figure 19 below, 44 percent of staff responded that they had learned how to complete forms during a TB and leprosy workshop, and another 40 percent responded learning during on-the-job training, and 20 percent of facility staff reported never having been trained in completing forms, showing a variation in the level of training received by facility staff. It is worth noting that one facility staff may have learned how to complete logistics forms, both during an OJT and TBL training.

Supervision, an important element of quality assurance for the performance of any logistics system, is related to all aspects of logistics management. Supervision helps to improve individual and system performance and can alert managers to potential problems such as stockouts, poor storage conditions, and products near their expiry dates. Supervision also presents an opportunity to enforce new systems and forms. Supervision can take several forms: the supervisor may review incoming reports, have face-to-face contact with those he or she supervises by bringing them to a central location, or the supervisor can visit each site. The frequency of supervision is an essential element and a useful indicator in assessing the potential quality of supervision and its effect on facility staff and system performance.

Figure 19. How Facility Staff Learned to Fill Out Forms
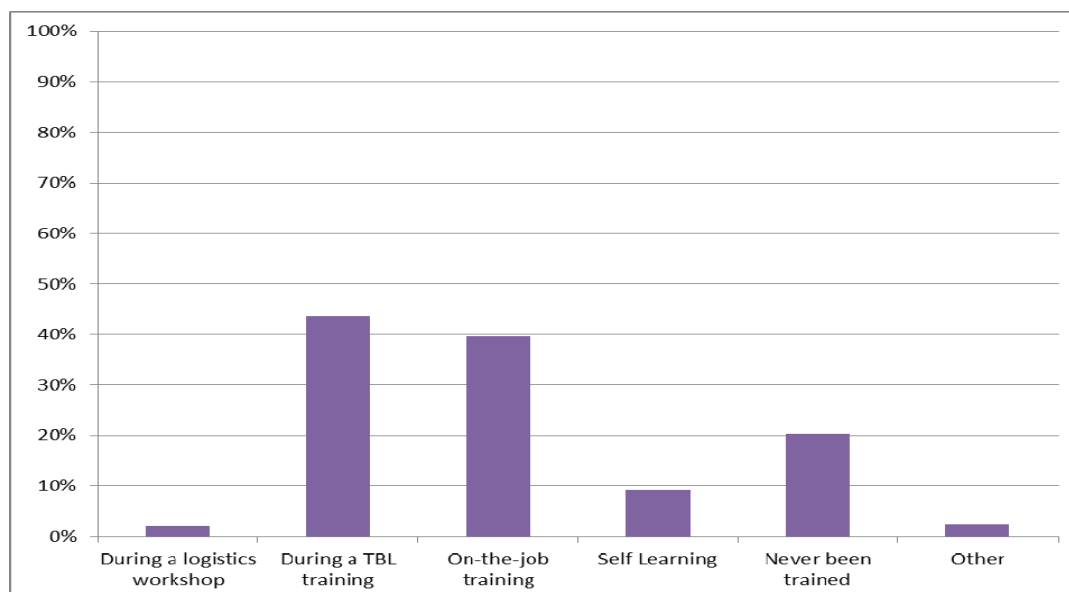
The LIAT survey asked when facilities received their last supervision visit. As shown in Figure 20 below, most public and private facilities reported receiving their last supervision visit sometime in the three months before the assessment, with a little more than half of the public facilities receiving a supervision visit within the last month. All stores received a supervision visit sometime in the six months before the assessment.

Figure 20. Last Supervision Visit
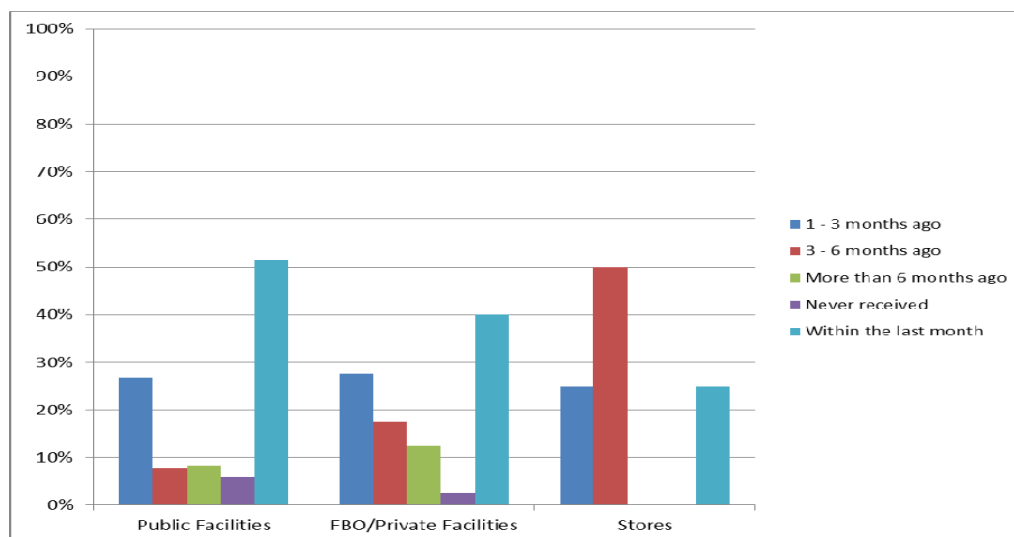
Many times, any visit from a higher level is labeled as a supervision visit. Data collectors also asked health facility staff whether drug management was addressed during the most recent supervision

visit. Examples of drug management being addressed include review of stock keeping records, reports, visual inspection of storage conditions, or removal of expired stock. The results showed that 58 percent of public facilities and 48 percent of FBO/private facilities received supervision visits that included drug management. However, a much higher percentage of stores reported receiving a supervision visit that included drug management.

Table 12. Supervision Visits that Included Drug Management

Facility Category	% supervision including drug management
Public Facilities	58%
FBO/Private Facilities	46%
Stores	75%

The graphic representation of supervisory visits to the health facilities further illustrates this finding. Health facilities in the Lindi region experienced the greatest rate of supervision visits, with all facilities reporting to have received some form of supervision. Mbeya region experienced the least amount of supervision with only three facilities. Mwanza region illustrates a clear contrast from one district to another.

Figure 21. Summary of Supervision Visits to Surveyed Facilities
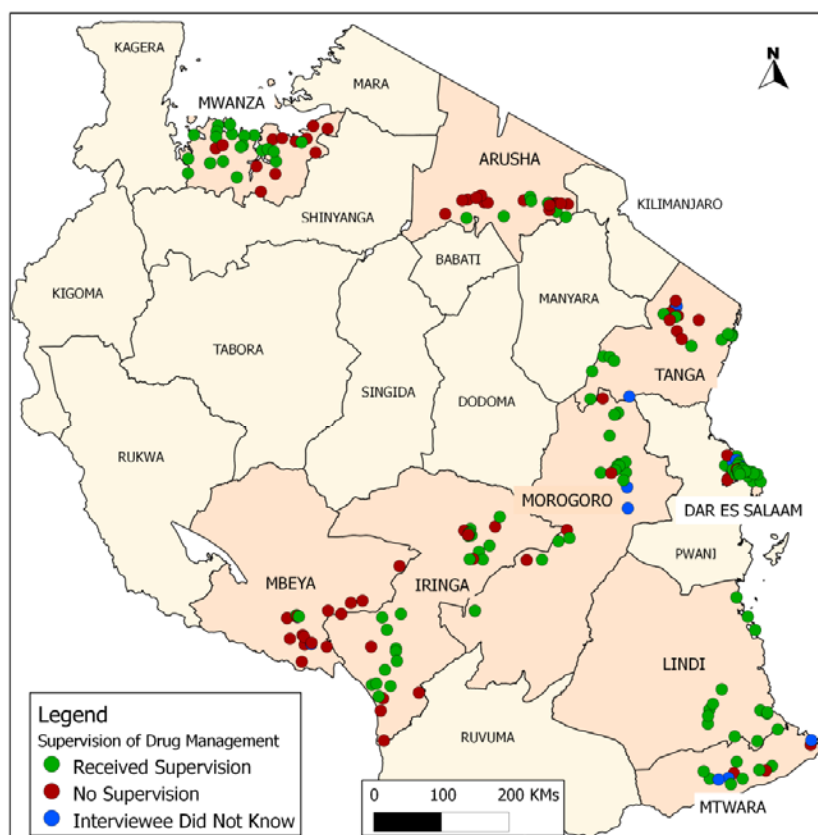
For example, as seen in the map below, in Mwanza region, facilities that received supervision are more likely to have stock keeping records available. Facilities shown as managing commodity on the map indicates that these facilities currently maintain RH, however, they do not use a stock keeping record for drug management. This also highlights the need for standardized supervision on commodity management.

Figure 22. Stock Keeping Record Status for RH in Mwanza Region
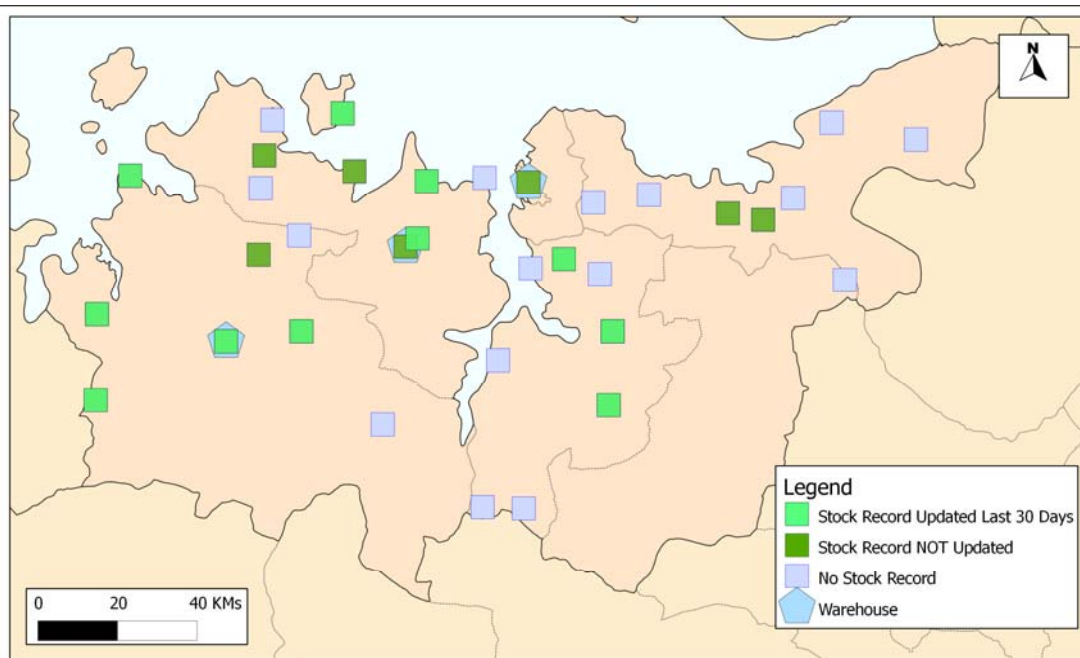
Warehousing and Storage

In general, warehousing and storage conditions in Tanzania vary widely between supply chain levels and by region. LSAT participants reported that there are written guidelines for warehousing practices but they are not widely available at the lower levels. TB and leprosy commodities do not have a cold chain requirement, which makes them easier to store, however each level still faces challenges in storage of TB and leprosy commodities. The central and regional levels generally have adequate storage space for the commodities, however the district and facility levels have small storage areas and, due to the storage constraints, some commodities are improperly stored. The available storage capacity to handle all of the TBL quantities needed to ensure that no stockouts occur varies depending on the size of the storage facility. TBL commodities are often, if not always, stored alongside other commodities and some smaller facilities do not have the capacity to adequately store all medicines. The district level often has difficulty maintaining adequate storage space for TBL commodities and when there are constraints, the district will usually order small amounts able to fit the space or store products at a neighborhood facility with additional space. The regional and district health councils are responsible for establishing and maintaining the storage guidelines as well as for maintaining good warehousing and storage practices at the facilities. Workshop participants noted some areas in need of storage improvement. These include increased

space for storage of TBL commodities, improved ventilation for maintaining adequate temperature, storeroom cleanliness, better arrangement for stacking commodities, improved security and increased availability of fire equipment for health facilities.

According to the LSAT participants, warehousing and storage quality assurance checks are done regularly at the higher levels and in a more informal, unstructured manner at the facility level. At the central and zonal levels, MSD has a quality assurance department to ensure that all products are being maintained according to the storage guidelines. The LSAT participants indicated that at the regional level, storage conditions are supposed to be checked bi- annually during supervision visits. At the district level, they are supposed to be conducted twice a quarter when receiving and ordering new supplies from the region however the LIAT findings showed that this system of supervision and oversight is not systematically adhered to and varied widely across regions. At the facility level, there is no structured inspection that occurs and expiries are not accounted for in the inventory forms.

Storage conditions observed at a health facility in Mwanza Region.

Workshop participants also reported that currently, the disposal of expired commodities is a lengthy and bureaucratic process resulting in many facilities that have not disposed expired product for long periods. The bureaucratic process to dispose expired commodities also has financial and human resource implications. Beyond this, many health personnel are not aware of the guidelines to properly dispose of commodities so they may be disposed of without record. There is currently a pile up of expired products at different levels of the supply chain because a coordinated large-scale destruction of expired commodities has not happened in approximately six years.

In order to provide clients with high-quality products, each facility must have safe, protected, and well-organized storage areas to help prevent damage and ensure efficient handling of products. As part of the LIAT survey, data collectors examined the facility's compliance with 17 universal guidelines for proper storage.

The storage conditions assessed were based on the following storage guidelines:
1. Products that are ready for distribution are arranged so identification labels and expiry dates and/or manufacturing dates are visible.
2. Products are stored and organized in a manner accessible for first-to-expire, first-out (FEFO) counting and general management.
3. Cartons and products are in good condition and not crushed due to mishandling. If cartons are open, products are not wet or cracked due to heat or radiation.
4. The facility makes it a practice to separate damaged and/or expired products and remove them from inventory.

5. Products are protected from direct sunlight.
6. Cartons and products are protected from water and humidity.
7. Storage area is visually free of harmful insects and rodents.
8. Storage area is secured with a lock and key but accessible during normal working hours, with access limited to authorized personnel.
9. Products are stored at the appropriate temperature according to product temperature specifications.
10. Roof is maintained in good condition to avoid sunlight and water penetration.
11. Storeroom is maintained in good condition (i.e., clean, all trash removed, sturdy shelves, and organized boxes).
12. The current space and organization is sufficient for existing products and reasonable expansion (i.e., receipt of expected product deliveries for the foreseeable future).
13. Fire safety equipment is available and accessible.
14. Products are stored separately from insecticides and chemicals.
15. Facilities large enough to require stacking of multiple boxes were also assessed for their adherence to these additional storage guidelines:
16. Products are stacked at least 10 centimeters off the floor.
17. Products are stacked at least 30 centimeters from the walls and other stacks.
18. Products are stacked no more than 2.5 meters high.

At each facility, data collectors assessed adherence to these storage conditions through direct observation (i.e., visual inspection). Figure 23 below shows the proportion of facilities, broken down by facility type, that were in compliance with at least 80 percent of the storage conditions As the results show, a much higher percentage of FBO/private facilities (73 percent) maintained at least 80 percent of the storage conditions in comparison to public facilities (43 percent) and stores (50 percent). These results indicate the need to emphasize the importance of maintaining good storage practices, especially at public facilities and district and regional stores.

Figure 23. Proportion of Facilities that Maintain At Least Eighty Percent of Storage Conditions
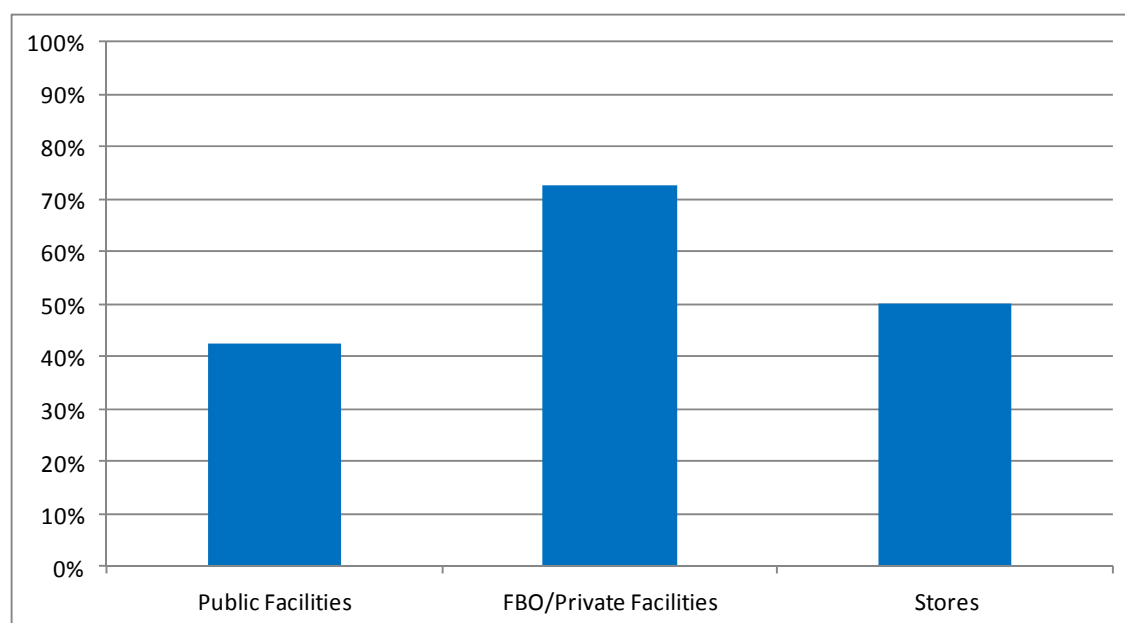
Finance and Donor Coordination

In 2010, the total funding for the NTLP, including for TB, TB/HIV and leprosy control activities from different sources, amounted to approximately $16,594,299. This included both domestic and donor support for commodities and services. The NTLP also receives direct financial support from a number of partners including the Global Fund, GLRA, and Centers for Disease Prevention and Control (CDC) under PEPFAR and USAID through Programs for Appropriate Technologies in Health (PATH). Novartis Foundation for Sustainable Development (NFSD) and the GDF under the Stop TB Partnership provided first-line anti-TB drugs. Other support includes cash from the basket fund under the Sector Wide Approach (SWAP), technical support and training from International Union Against Tuberculosis and Lung Diseases (IUATLD), WHO-Afro, Netherlands TB Foundation (KNCV) and TBCAP[8]. According to NTLP, total expenditure for 2010 for first and second line TB drugs amounted to $ 2,557,810. The following table illustrates the TBL program financing for 2010.

[8] Republic of Tanzania. Ministry of Health and Social Welfare. National Tuberculosis and Leprosy Programme. Annual Report 2010.

Table 13. NTLP Financing 2010

Planned Intervention/ Service Delivery Area	Actual Financing	Government	Global Fund	Other External Sources
First-line TB drugs	2,510,410	200,830	-	2,309,580
Staff working for TB control (central unit staff and subnational TB staff)	6,402,220	5,473,960	545,600	382,660
Routine program management and supervision activities	2,767,680	31,180	840,890	1,895,610
Laboratory supplies and equipment for smears, culture and DST	529,570			529,570
PPM (Public-Public, Public–Private Mix-DOTS)	168,600		18,060	150,540
Collaborative TB/HIV activities	1,168,610		141,430	1,027,180
Second-line drugs for MDR-TB	47,400		47,400	
Management of MDR-TB (budget excluding second-line drugs)	223,870		223,870	
Community involvement	579,890			579,890
ACSM (Advocacy, communication and social mobilization)	761,800		351,620	410,180
Operational research	116,000			116,000
Surveys to measure TB burden and impact of TB control	57,000		57,000	
All other budget lines for TB (e.g., technical assistance)	680,000		136,330	543,670
TOTAL (calculated automatically)	**16,013,050**	**5,705,970**	**2,362,200**	**7,944,880**

Table 14. TBL Program's and Donor's Expenditures, 2010

Item	Government Expenditure		Donor and Other Sources Expenditure	
	Logistics and Other Programming	Clearing and Forwarding	1st and 2nd Line Drugs	Logistics and Other Programming
	$ 31,180	$200,830	$ 2,356,980	$2,736,500
TOTAL	**232,010**		**5,093,480**	

The government pays salaries for the NTLP staff and is also responsible for costs associated with clearing and forwarding of commodities once they arrive in-country. While some costs are covered, funding is not adequate for some of the key supply chain components including LMIS, staff

development in logistics, transportation and advocacy. The NTLP is heavily dependent on donor funding, and program sustainability would be under serious threat should donors pull out or substantially decrease their funding levels. Donors provide all the funding for both first- and second-line treatment. Only 20 percent of the total budget comes from government funds. The remaining 80 percent is supplied by the donors. As shown in Table 14 above, the majority of funding, for both commodities and logistics, comes from donors. There is a National Strategic Plan for 2009/10 – 2015/2016 which also addresses the importance of an uninterrupted supply of TBL commodities.

Conclusions

The combined LIAT and LSAT assessments revealed several strengths of the TB and the leprosy logistics system in Tanzania, and also revealed aspects that must be addressed to strengthen the NTLP. Different treatment regimens for both TB and leprosy can create challenges for the logistics system, and the importance and length of treatment makes it crucial that drugs are consistently available to ensure uninterrupted treatment and minimize drug resistance.

Based on the results from both the LIAT and the LSAT, the following picture of how the TBL system operates emerged. There is a high level of commitment to the TB and the leprosy program in Tanzania from the government, partners, and donors. In coordination with the MSD, the NTLP staff such as the pharmacist, supplies officer and M&E-oriented staff are responsible for the management and coordination of all logistics activities for the program. There is information flow among the central, regional and the district levels on total quantities of stock on hand and total numbers of patients on treatment, by regimen. The NTLP conducts an annual quantification in collaboration with the GDF. Procurement is conducted by GDF for first-line treatments and streptomycin, while procurement of second-line treatment is done by MSD. Leprosy commodities are purchased and cleared by the WHO. MSD is primarily responsible for storage and distribution of commodities based on the NTLP's distribution list. Both TB and leprosy commodities are stored at MSD.

The assessment also identified several areas of the TBL logistics system that require strengthening. Salient findings by category are noted below.

Product Management

Health facilities only manage commodities if they have patients on treatment that require those specific drug(s). Since there is no buffer stock maintained at the health facilities, starting any new patients on treatment requires requesting drugs from the DTLC. In many cases, when the DTLC is unable to visit the health facilities, either the health facility staff or the patient has to travel to the district hospital to obtain drugs. This creates an unnecessary economic hardship on either the facility staff or the patient, who may decide not to travel to the district to obtain drugs, thereby delaying treatment and risking further infection of others, or creating resistance or treatment failure.

Quantification

Though an annual quantification for TB first-line commodities is conducted in collaboration with the GDF, it does not take consumption data into account; only patient data is used, which is important in conducting quantifications, but does not provide a comprehensive picture of the country needs based on consumption patterns, which is necessary for effective supply planning and pipeline monitoring over time. This practice highlights the importance of collecting consumption data from every level within the system.

Ordering and Reporting

Lack of a standardized reporting and ordering system at the health facility level has led to inconsistencies in ordering and reporting of TBL commodities. Some facilities order from the higher level while others never order. Although the current system requires DTLCs to collect patient data and resupply commodities to the health facilities, their inability to do so consistently due to lack of transportation or limited funds has resulted in a non-standardized system. For instance, if DTLCs are unable to resupply commodities, health facilities or patients must use their own time and funds to travel to the district hospital to pick up their medicines.

LMIS

The LMIS is often considered the backbone of a well-functioning logistics system. Although reporting and ordering forms exist at the district and regional level, data on consumption and losses and adjustments is not collected at any level. Inadequate reporting of such essential data negatively impacts areas such as quantification and procurement planning and also creates a challenge in determining quantities of TB and leprosy drugs consumed over a specified time period. At the health facilities, lack of, or inconsistent use of, stock keeping records made it difficult to determine the exact flow of commodities including quantities consumed, received, and stockout rates.

Product Availability

As the results of the assessment indicate, stockouts are widespread and a major impediment to ensuring quality and uninterrupted TB or leprosy treatment. Higher percentages of both public and private facilities experienced stockouts during the previous six months, as opposed to only on the day of the visit. A national level stockout of streptomycin resulted in wide spread rationing and scarce availability. Unfortunately, due to the low percentage of available and updated stock keeping records, this indicator was only measured for facilities with updated stock keeping records. As such, although the percentage of stockouts in the last six months was calculated, it does not reflect the true stockout rate. Almost all public and private facilities had a much higher rate of stock availability for adult first-line treatments for TB—4FDC-RHZE and 2FDC-RH. Additionally, a higher percentage of both public and private facilities had these two commodities available on the day of the visit in comparison to in previous six months. However, second-line treatment for TB, 3FDC-RHZ and streptomycin experienced higher stockout rates. In cases of stockouts of second-line treatment, the assessment found that some patients receive first-line regimens instead, which can result in treatment failure and resistance. Similarly, in cases of stockouts for pediatric formulations, facility staff reported cutting up adult treatment pills, further compounding the problem of toxicity among pediatric patients.

Overall, a smaller percentage of facilities manage leprosy commodities than TB commodities, indicating a comparatively smaller leprosy patient population, and perhaps even smaller proportions of patients who utilize FBO/private facilities for obtaining leprosy drugs. With the exception of MB for adults, none of the FBO/private facilities manage leprosy drugs. A higher percentage of public facilities and stores experienced stockouts of PB than of MB on the day of the visit.

Training and Supervision

It is expected that staff members who receive training on how to complete reporting and ordering forms are more likely to maintain proper records and reports. Though a majority of the staff reported receiving either logistics training or OJT, the variation in proper record keeping, including updating stock keeping records, indicates variability in the training received and reinforcement of skills learned from the higher level staff. Given that stock keeping records were not used or kept updated at many facilities, conducting routine supervision visits can have a significant impact on the performance of health facilities. Less than half (48 percent) of all facilities assessed reported receiving supervision of drug management in the previous 90 days as per NTLP policy. In some districts, supervision visits were found to be more heavily concentrated in urban areas than in rural areas, meaning that remote facilities are less likely to receive routine supervision visits than those in or closer to urban areas. Many regional and district coordinators indicated funding constraints for such items as fuel limits their ability to access remote facilities. These results demonstrate an urgent need for routine supervision visits, with an established schedule to all facilities regardless of the distance. Additionally, it requires commitment on behalf of the NTLP to invest funds for supervision activities, including engaging CHMT for integrating logistics-specific supervision activities with other supervision visits, and providing funds to the NTLP for supervision.

Transportation and Distribution

Distribution of TBL drugs from the district to the health facilities varies greatly and is contingent upon availability of funds for vehicles, and the willingness and ability of the DTLC to resupply commodities to the health facilities. However, as noted earlier, many times health facility staff or patients themselves have to collect drugs from the district hospital. The results show a direct correlation between facilities that collect their own commodities and stockout rates. In order to ensure uninterrupted supply of commodities, this disruption in distribution to some of the facilities, especially those in remote areas, must be addressed.

Storage

The central and regional levels generally have adequate storage space, though insufficient storage space and limited knowledge on appropriate storage conditions were some of the major challenges reported at the regional, district and the facility level. FBO/private facilities are in better compliance with proper storage practices than health facilities, district and regional stores which underscores the importance of supportive supervision, training and dissemination of storage guidelines to all levels in order to improve storage conditions.

Finance and Donor Coordination

The NTLP is heavily dependent on donor funding, and program sustainability would be under serious threat should the donors cease to provide support or should they substantially decrease their funding levels. Although the government covers the salaries of the staff members working for the NTLP, only 20 percent of the budget comes from the government. The current funding is not

sufficient for covering some of the key supply chain components, including LMIS, staff development in logistics, transportation and advocacy. Since the National Strategic Plan for 2009/10 – 2015/2016 addresses the importance TBL commodity availability, the NTLP, in collaboration with the MOHSW, should identify other sources of funding to ensure an uninterrupted supply of TBL commodities.

System Design

Expert analysis of the existing system parameters, such as recommended maximum-minimum inventory levels and the number of tiers in the system, reveal a number of critical weaknesses that, if left unaddressed, will prevent optimal system performance even if the challenges discussed above are address. These systemic weaknesses include—

- The overall length of the pipeline—the time required for a commodity to travel through each level of storage and distribution before reaching the client—is longer than the shelf-life of the current FDC medicines. The length of a national pipeline is determined by adding the stated maximum stock levels of each tier of the system. Thus, the current pipeline is 39 months long: 24 (central) + 6 (regional) + 6 (district) + 3 (facility). The shelf life of FDC regimens is currently 24 months, and MSD requires a minimum of 80% shelf life remaining in order to receive, leaving only 20 months shelf life once the commodity enters the in-country supply chain. Therefore, in order to ensure that expiries are prevented, the length of the national pipeline must be reduced substantially.

- The number of storage and distribution tiers is not optimal. This weakness is related to the issue of the length of the pipeline, but also affects the cost and efficiency of the system. MSD's infrastructure is not being used effectively to store and distribute TBL commodities. For most other commodities (essential medicines, ARV drugs HIV tests, laboratory reagents and supplies, etc.), MSD uses both central and zonal warehouses to store, with central distributing to zones semi-monthly based on issues data from the zonal stores. Facility consignments are picked and packed at the zonal stores and then delivered either to the district for onward distribution, or (in an increasing number of regions) directly to the facility. However, the TBL system does not take full advantage of MSD's structure, with deliveries going to the region and then program funding being used to distribute commodities to district and facility level. This parallel, vertical supply chain is costly, and with donor funding diminishing, is not sustainable. Furthermore, the assessment findings indicate that proximity to the next level of storage does not improve product availability—stockouts occur at facilities in close proximity to district and regional stores with at least as much frequency as at facilities that are more distant.

Recommendations

Throughout the assessment, there was consistent feedback regarding the lack of defined accountability in the way the system operates and where responsibility lies to ensure that commodities are consistently available and that programs function without fail. Both of the assessment tools revealed a number of key target areas for system improvement. The qualitative and quantitative assessments and additional discussions with stakeholders led to these priority recommendations:

Strengthen Logistics Management within NTLP

Designate staff within NTLP responsible for logistics management: Designating staff within the NTLP for logistics management will enable data visibility and improve efficiency of product management and commodity distribution efforts, and better ensure the success of the NTLP. The designation of key personnel within the NTLP who are specifically responsible for logistics functions, including the management of logistics data, information, reports and distribution efforts will improve overall commodity availability. Once the key logistics personnel are designated, it will facilitate systemization of all logistics procedures for both reporting and distribution and improve coordination between the NTLP, MSD, regional, district and health facility level. It is recommended that the NTLP revise and update current guidelines and ensure they are distributed and implemented at all levels of the system. The designated staff will serve to routinize supervision from the central level, and provide specific guidance on program adjustments and logistics updates. They will be responsible for strengthening partnerships for logistics management within the NTLP, and will serve as the coordinating body between donors for management and commodity support as well as with in-country counterparts such as the RTLC, DTLC and MSD to streamline commodity ordering and distribution.

Coordination: The designated staff within the NTLP will enable coordination between the CHMT and RHMT to incorporate and integrate TBL activities into other program areas. They will serve to bring visibility of TBL activities to relevant government stakeholders, and to advocate for increased government participation and ownership of TBL issues, to develop a sustainable long-term strategy while continuing uninterrupted services. They will coordinate with MSD on providing real time reports that identify redistribution needs down to the facility level so that MSD can accurately plan distribution schedules.

The designated staff within the NTLP will enable coordination between the CHMT and RHMT to incorporate and integrate TBL activities into other program areas. The staff will coordinate integrated supervision, transportation and distribution of TBL commodities with the ILS. They will serve to bring visibility of TBL activities to relevant government stakeholders, and to advocate for increased government participation and ownership of TBL issues, to develop a sustainable long-term strategy while continuing uninterrupted services. They will coordinate with MSD on providing real

time reports that identify redistribution needs down to the facility level so that MSD can accurately plan distribution schedules.

Forecasting and Procurement: A strong recommendation from the assessment that will also fall under the responsibility of the designated staff at NTLP will be increased accuracy of forecasting and increased process management of commodity procurements. Focus should be placed on both collecting and using facility level consumption data that can be used for inventory management, forecasting and procurement planning, and pipeline monitoring. Finally, the NTLP staff will coordinate with the donors to develop a short and long term procurement plan with coordinated funding commitments.

Standardize and Increase Availability of Logistics Management Tools

While the assessment revealed a few logistics management tools being used to capture data and manage the program, there was a lack of systematized and widely available tools at each level of the supply chain, most notably at the facility level where most of the TBL commodities are being managed. The recommendations following this assessment include drafting and finalization of standardized logistics management guidelines and report and requisition tools for effective commodity management. The first recommendation associated with the drafting of improved logistics tools is to redesign the current reporting tools to include key logistics information, including stock on hand, losses and adjustments and quantities consumed, in order to accurately track commodity flow including consumption rates. Once the reporting tools have been enhanced in this way, the logistics staff within the NTLP should ensure that all reporting tools are made available to all health facilities, as the assessment revealed that while some facilities had a routinized reporting system, other facilities did not have logistics tools available, and so were reverting to an informal report and requisition system. The availability and consistent use of stock keeping records, such as ledger books, at the health facility level will increase data visibility and improve forecasting estimates. In addition to the standardization of reporting tools, there is a strong recommendation to formalize SOPs, curriculum and relevant job aids for logistics training and inventory management. Included in the recommendations are the regular review, revision and distribution of the essential drug list to all levels of the supply chain.

Financial Management

Specific recommendations were made during the assessment regarding funding allocations, financial management and leveraging of existing resources. The assessment revealed the need for the NTLP to solicit and allocate more funds for routine supervision vehicles and, as an extension of this, to provide financing towards the management and upkeep of supervision vehicles. It was also pointed out that due to the geographical location of some difficult-to-reach health facilities, the use of motorcycles is impractical and the purchase of a 4x4 vehicle is recommended. In terms of government ownership, the recommendation is to ensure that more funds are allocated to procure drugs through the general GOT budget and to integrate the budget for supervision and distribution into the district council through the ILS. Country ownership would be further ensured by injecting local funds whereby making the program more sustainable.

Capacity Building

One of the strongest overarching recommendations that came through the assessment is the continued and enhanced investment in capacity building at all levels of the supply chain in order to improve on commodity availability. The first recommendation towards capacity building is to recruit and train more staff in the arena of logistics. Pharmaceutical personnel responsible for operating the ILS should be involved in program operations and training for ordering, reporting and dispensing of TBL drugs. The assessment also found a lack of standardized warehousing and inventory practices for commodity managements. A recommendation following these findings is to develop SOPs and warehousing guidelines to improve storage practices at each level of the supply chain. The capacity building component includes the enforcement of quality assurance through established supervision activities at all levels. Supportive supervision efforts should be targeted to the facility level and supervision OJTs for the DTLCs need to be standardized across all regions. These significant endeavors will contribute to reaching the shared goal of improving TB and leprosy diagnosis and care and minimizing the TB burden in Tanzania.

Establishment of a Central Database at the Program Level

In order to effectively monitor commodity trends including stock on hand and consumption, and act efficiently, a central data base at the program level should be established. This will also the program staff to analyze logistics reports and use logistics data gathered for decision making.

System Optimization

In addition to the recommendations agreed by stakeholders during the assessment, SCMS supply chain experts recommend that the logistics system design be revised holistically, through a participatory system optimization process involving all key stakeholders. The current TBL logistics system should be aligned with the ILS where possible to leverage available resources and provide resources when needed. The designated staff within the NTLP should coordinate integrated supervision, transportation and distribution of TBL commodities with the ILS. The length of the pipeline should be reviewed and shortened where feasible, with revision in the number and types of storage levels, reduction of maximum stock levels where possible, and greater leveraging of MSD structures to achieve cost savings in distribution. During this process, LMIS tools would be designed and SOPs would be revised to capture new or optimized processes, roles, and responsibilities throughout the supply chain. Capacity building efforts would follow the optimized system, with training curricula developed around the new LMIS tools and the revised SOPs.

Annex 1. Facility List

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Gati Dispensary	0	Dk1010	39.05681	-6.78956	Dar es Salaam	Dar es Salaam	FBO/Private Dispensary	Private
Msimbazi	072062	Di1020	39.25633	-6.8244	Dar es Salaam	Dar es Salaam	FBO/Private Dispensary	FBO/NGO/VA
St. Camilius dispensary	072086	Di1024	39.23511	-6.86349	Dar es Salaam	Dar es Salaam	FBO/Private Dispensary	FBO/NGO/VA
Mico disp	73318	Dt1022	39.25059	-6.86097	Dar es Salaam	city	FBO/Private Dispensary	Privfate
Duthumi	502036	Mm4005	37.79625	-7.38333	Dar es Salaam	Morogoro	Health Centre	Government
Kinole	502102	Mm6015	37.75849	-6.91217	Dar es Salaam	Morogoro	Dispensary	Government
Mtombozi	502235	Mm6013	37.77991	-7.10602	Dar es Salaam	Morogoro	Dispensary	Government
Ngerengere Health Center	502256	Mm6014	37.75850	-6.91218	Dar es Salaam	Morogoro	Health Centre	Government
Tawa	502299	Mm4008	37.72918	-7.01689	Dar es Salaam	Morogoro	Health Centre	Government
Chita Rural Dispensary	503025	Mk1008	36.47871	-8.09748	Dar es Salaam	Ifakara	Dispensary	Government
Idete Prison	503045	Mk1001	36.47874	-8.09765	Dar es Salaam	Ifakara	Dispensary	Government
Kibaoni	503072	Mk1005	36.68130	-8.08863	Dar es Salaam	Ifakara	Health Centre	Government
Kibaoni	503072DH	Mk1005W	36.68130	-8.08863	Dar es Salaam	Ifakara	District Store	Government
Kilombero Sugar	503095	Mk1007	36.89272	-7.83923	Dar es Salaam	Kilombero	FBO/Private Hospital	Private

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Mang'ula	503158	Mk1010	35.80924	-8.78236	Dar es Salaam	Ifakara	Health Centre	Government
Mlimba	503207	Mk1006	35.80924	-8.78248	Dar es Salaam	Ifakara	Health Centre	Government
Msolwa Station	503223	Mk1003	37.00143	-7.68819	Dar es Salaam	Kilombero	Dispensary	Government
Al-Jamih	505004	Mm5001	37.66925	-6.80407	Dar es Salaam	Morogoro	FBO/Private Dispensary	FBO/NGO/VA
Kihonda Magereza	505089	Mm5003	37.67079	-6.828454	Dar es Salaam	Morogoro	Dispensary	Government
Kingolwira	505101	Mm5009	37.75141	-6.77655	Dar es Salaam	Morogoro	Health Centre	Government
Mafiga	505141	Mm5011	37.64713	-6.82366	Dar es Salaam	Morogoro	Health Centre	Government
Morogoro Regional	505212	Mm5007	37.67068	-6.82837	Dar es Salaam	Morogoro	Regional Hospital	Government
Mzinga	505250	Mm5010	37.61826	-6.88553	Dar es Salaam	Morogoro	Public Hospital	Other
Sabasaba	505277	Mm5004	37.03704	-7.79347	Dar es Salaam	Morogoro	Health Centre	Government
Bwagala	506015	Mm6008	37.61214	-6.13863	Dar es Salaam	Morogoro	FBO/Private Hospital	FBO/NGO/VA
Kibati	506073	Mm6006	37.43557	-5.93364	Dar es Salaam	Morogoro	Health Centre	Government
Lusanga	506137	Mm6001	37.64101	-6.11862	Dar es Salaam	Morogoro	Dispensary	Government
Melela	506176	Mm6011	37.42864	-6.92338	Dar es Salaam	Morogoro	Health Centre	Government
Mziha	506249	Mm6004	37.78260	-5.9014	Dar es Salaam	Morogoro	Dispensary	Government
Mzumbe IDM	506251	Mm6007	37.56647	-6.924	Dar es Salaam	Morogoro	Health Centre	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Turiani	506313	Mm6005	37.59156	-6.14426	Dar es Salaam	Morogoro	Dispensary	Government
Wami Dakawa	506329	Mm6012	37.53428	-6.43584	Dar es Salaam	Morogoro	Dispensary	Government
Chuo Kikuu (UDSM)	701103	Dk1011	39.20806	-6.77916	Dar es Salaam	Dar es salaam	Health Centre	Government
Goba	701155	Dk1003	39.15793	-6.74074	Dar es Salaam	Dar es salaam	Dispensary	Government
Kawe	701199	Dk1004	39.22818	-6.7367	Dar es Salaam	Dar es Salaam	Dispensary	Government
Kigogo Moravian	701217	Dk1005	39.25244	-6.81669	Dar es Salaam	Dar es Salaam	FBO/Private Dispensary	FBO/NGO/VA
Kijitonyama	701218	Dk1001	39.23141	-6.77628	Dar es Salaam	Dar es Salaam	Dispensary	Government
Kunduchi	701243	Dk1006	39.20830	-6.67011	Dar es Salaam	Dar es Salaam	Dispensary	Government
Mabwe Pande	701259	Dk1007	39.08181	-6.65583	Dar es Salaam	Dar es Salaam	Dispensary	Government
Magomeni	701266	Dk1014	39.25788	-6.80646	Dar es Salaam	Dar es Salaam	Health Centre	Government
Mbezi Dispensary	701312	Dk1008	39.20168	-6.71435	Dar es Salaam	Dar es Salaam	Dispensary	Government
Mburahati	701317	Dk1009	39.24209	-6.8052	Dar es Salaam	Dar es Salaam	Dispensary	Government
MLALAKUWA	701362	Dk1002	39.23874	-6.74567	Dar es Salaam	Dar es Salaam	Dispensary	Government
Mwananyamala 1	701396A	Dk1015	39.25305	-6.78746	Dar es Salaam	Dar es Salaam	District Hospital	Government
Mwananyamala Hospital II	701396B	Dk1015W	39.25305	-6.78746	Dar es Salaam	Dar es Salaam	District Hospital	Government
Sinza	701463	Dk1012	39.22268	-6.78288	Dar es Salaam	Dar es Salaam	Health Centre	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Amana	702018	Di1015	39.25907	-6.82673	Dar es Salaam	Dar es Salaam	District Hospital	Government
Buguruni	702080	Di1012	39.23900	-6.83889	Dar es Salaam	Dar es Salaam	Health Centre	Government
Buguruni Anglican	702081	Di1003	39.25008	-6.8288	Dar es Salaam	Dar es Salaam	FBO/Private Health Centre	FBO/NGO/VA
Buyuni	702085	Di1004	39.10092	-6.9567	Dar es Salaam	Dar es Salaam	Dispensary	Government
Chanika	702099	Di1005	39.09229	-6.980737	Dar es Salaam	Dar es Salaam	Dispensary	Government
Ibrahim Haji	702126	Di1018	39.28445	-6.81752	Dar es Salaam	Dar es Salaam	FBO/Private Health Centre	Private
Hindu Mandal	702166	Di1019	39.28622	-6.81673	Dar es Salaam	Dar es Salaam	FBO/Private Hospital	Private
Kinyerezi	702230	Di1021	39.15960	-6.84326	Dar es Salaam	Dar es Salaam	Dispensary	Government
Kitunda	702233	Di1022	39.19767	-6.90222	Dar es Salaam	Dar es Salaam	Dispensary	Government
Kiwalani	702235	Di1023	39.22746	-6.85895	Dar es Salaam	Dar es Salaam	Dispensary	Government
Mnazi Mmoja	702366	Di1025	39.28099	-6.82038	Dar es Salaam	Dar es Salaam	Health Centre	Government
Tabata NBC	702483	Di1009	39.21267	-6.83614	Dar es Salaam	Dar es Salaam	Dispensary	Government
Vingunguti	702571	Di1010	39.22558	-6.84799	Dar es Salaam	Dar es Salaam	Dispensary	Government
Buza	703089	Dt1003	39.23130	-6.89195	Dar es Salaam	Dar es Salaam	Dispensary	Government
CHEKENI MWASONGA	703101	Dt1020	39.42091	-6.98744	Dar es Salaam	Dar es Salaam	Dispensary	Government
Consolata Sisters	703106	Dt1004	39.27249	-6.88456	Dar es Salaam	Dar es Salaam	FBO/Private Dispensary	FBO/NGO/VA

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Gezaulole	703152	Dt1005	39.41416	-6.86726	Dar es Salaam	Dar es Salaam	Dispensary	Government
Kibada	703207	Dt1023	39.33871	-6.889507	Dar es Salaam	Dar es Salaam	Dispensary	Government
Kigamboni HC	703213	Dt1013	39.31181	-6.82709	Dar es Salaam	Dar es Salaam	Health Centre	Government
Kigamboni HC	703213DH	Dt1013W	39.31181	-6.82709	Dar es Salaam	Dar es Salaam	District Store	Government
KIMBIJI DSP	703227	Dt1026	39.52673	-6.99008	Dar es Salaam	Dar es Salaam	Dispensary	Government
KISARAWE 2	703232	Dt1007	39.35757	-6.9231	Dar es Salaam	Dar es Salaam	Dispensary	Government
Mbutu	703318	Dt1021	39.48184	-6.89466	Dar es Salaam	Dar es Salaam	Dispensary	Government
Mgulani JKT	703331	Dt1008	39.27877	-6.8519	Dar es Salaam	Dar es Salaam	Health Centre	Government
Mjimwema	703359	Dt1024	39.35859	-6.860473	Dar es Salaam	Dar es Salaam	Dispensary	Government
MWONGOZO DSP	703401	Dt1025	39.43616	-6.88799	Dar es Salaam	Dar es Salaam	Dispensary	Government
Vijibweni	703422	Dt1019	39.32245	-6.86344	Dar es Salaam	Dar es Salaam	Public Hospital	Government
Yombo Vituka	703579	Dt1010	39.23600	-6.87849	Dar es Salaam	Dar es Salaam	Dispensary	Government
Yombo Vituka	703579DH	Dt1010w	39.23600	-6.87849	Dar es Salaam	Dar es Salaam	District Store	Government
Kingugi	703584	Dt1011	39.25093	-6.90324	Dar es Salaam	Dar es Salaam	Dispensary	Government
Ilala municipal	DAR101	Dar101	39.25933	-6.82656	Dar es Salaam	Dar es Salaam	Warehouse	Government
TEMEKE HOSP	DAR102	Dar102	39.26280	-6.86022	Dar es Salaam	Dar es Salaam	Warehouse	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Morogoro Regional Warehouse	MOR101	Mor101	37.67185	-6.82729	Dar es Salaam	Morogoro	Warehouse	Government
Mgongo	1101228	Ii1011	35.72459	-7.70157	Iringa	Mgongo	FBO/Private Dispensary	FBO/NGO/VA
Igwachanya	1104044	In1010	34.64510	-9.061	Iringa	Igwachanya	FBO/Private Dispensary	FBO/NGO/VA
Makambako	1104215	In1011	34.82688	-8.84684	Iringa	makambako	Health Centre	Government
Njomb	1104303	In1006	34.77122	-9.30841	Iringa	Njombe	District Hospital	Government
Ulembwe	1104355	In1007	34.77060	-9.34396	Iringa	Njombe	Health Centre	Government
Uwemba	1104366	In1008	34.78714	-9.47221	Iringa	Uwemba	FBO/Private Health Centre	FBO/NGO/VA
Kipingu	1105150	Il1001	34.63859	-10.53208	Iringa	Kipingu	Dispensary	Government
Luana	1105168	Il1002	34.61437	-9.97281	Iringa	Luana	FBO/Private Dispensary	FBO/NGO/VA
lugarawa	1105175	Il1008	34.70969	-9.8053	Iringa	Ludewa	FBO/Private Hospital	FBO/NGO/VA
Lupande	1105182	Il1003	34.46041	-9.7946	Iringa	Ludewa	Dispensary	Government
Maholong'wa	1105213	Il1006	34.75491	-9.92762	Iringa	Ludewa	Health Centre	Government
Mavanga	1105247	Il1004	35.09052	-9.884026	Iringa	Ludewa	Dispensary	Government
Mbwila	1105256	Il1005	34.55513	-9.94586	Iringa	Mbwila	Dispensary	Government
Mlangali	1105279	Il1011	34.51972	-9.77677	Iringa	Mlangali	Health Centre	Government
Nindi	1105301	Il1007	34.58659	-10.13507	Iringa	Ludewa	FBO/Private Health Centre	FBO/NGO/VA
Itamba Disp	1106002	Ii1012	35.64378	-7.72674	Iringa	Iringa	Dispensary	Government
Igumbilo	1106043	Ii1009	35.74139	-7.78599	Iringa	iringa town	Dispensary	Government
Ipogolo helath center	1106082	Ii1005	35.69868	-7.79366	Iringa	iringa town	Health Centre	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Ipogolo health center	1106082DH	Ii1005W	35.69868	-7.79366	Iringa	Iringa town	District Store	Government
Iringa	1106086	Ii1007	35.69765	-7.78165	Iringa	Iringa	Regional Hospital	Government
Ngome	1106299	Ii1006	35.71618	-7.75049	Iringa	Ngome	Health Centre	Government
Police	1106314	Ii1003	35.70531	-7.76212	Iringa	Iringa	Dispensary	Government
Kisinga Dispensary	1107003	Ik1013	35.98276	-7.91781	Iringa	Kisinga	Dispensary	Government
Kilolo	1107020	Ik1012	35.84581	-8.0019	Iringa	Kilolo town	Dispensary	Government
Ilula Designated District Hospital	1107069	Ik1010	36.05229	-7.66594	Iringa	Ilula Town	District Hospital	FBO/NGO/VA
Kidabaga	1107124	Ik1007	35.89870	-8.10347	Iringa	Kidabaga town	Health Centre	Government
Lyasa Image	1107196	Ik1003	36.11057	-7.53547	Iringa	Lyasa Image	Dispensary	Government
Pomerin	1107316	Ik1005	35.76837	-8.09787	Iringa	Kilolo	FBO/Private Dispensary	FBO/NGO/VA
Ukumbi	1107352	Ik1011	35.72457	-8.1032	Iringa	Ukumbi	Dispensary	Government
Ilembula	113059	In1002	34.57886	-8.89845	Iringa	Ilembula	FBO/Private Hospital	FBO/NGO/VA
Imiliwaha Health Center	IL1014	Il1014	34.63062	-9.5932	Iringa	Imiliwaha	FBO/Private Health Centre	FBO/NGO/VA
Kipengere	IN1003	In1003	34.43991	-9.29029	Iringa	Kipengere	FBO/Private Health Centre	FBO/NGO/VA
Iringa Regional Warehouse	IRI101	Iri101	35.69765	-7.78165	Iringa	Iringa	Warehouse	Government
Igoma	1202053	Mm3014	33.84730	-9.30144	Mbeya	Mbeya	Dispensary	Government
Ilembo	1202076	Mm2002	33.35402	-9.20373	Mbeya	Mbeya Rural	Health Centre	Government
Inyala	1202080	Mm2006	33.44645	-8.9157	Mbeya	Mbeya Rural	Health Centre	Government
Iwindi	1202115	Mm2001	33.31077	-8.9312	Mbeya	Mbeya	Dispensary	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Military hospital	1202203	Mm2009	33.34941	-8.96197	Mbeya	Mbeya	Public Hospital	Government
SANTILYA	1202301	Mm2010	33.35906	-9.11032	Mbeya	Mbeya	Dispensary	Government
IFISI	1202356	Mm2007	33.31077	-8.9314	Mbeya	Mbeya Rural	Public Hospital	Government
Tukuyu District Hospital	1204051	Mr1011	33.63997	-9.2681	Mbeya	Mbeya	District Hospital	Government
Tukuyu District Hospital	1204051DH	Mr1011W	33.63997	-9.2681	Mbeya	Mbeya	District Store	Government
Igogwe	1204052	Mr1012	33.52268	-9.15234	Mbeya	Mbeya	FBO/Private Hospital	FBO/NGO/VA
Ikuti	1204066	Mr1010	33.55207	-9.27841	Mbeya	Mbeya	Health Centre	Government
Itete	1204105	Mr1007	33.52271	-9.15242	Mbeya	Mbeya	FBO/Private Hospital	FBO/NGO/VA
Kiwanja mpaka	1204147	Mm3013	33.44075	-8.89138	Mbeya	Mbeya City	Health Centre	Government
Kiwira	1204149	Mr1003	33.64036	-9.26861	Mbeya	Mbeya	Dispensary	Government
Kyimo	1204155	Mr1004	33.54130	-9.17555	Mbeya	Mbeya	Dispensary	Government
Masukulu	1204197	Mr1006	33.64332	-9.25323	Mbeya	Mbeya	Health Centre	Government
Isoko DDH	1205093	Mi1007	33.51745	-9.50705	Mbeya	Mbeya	FBO/Private Hospital	FBO/NGO/VA
Itumba District Hospital	1205109	Mi1006	33.45394	-8.91017	Mbeya	Mbeya	District Hospital	Government
Itumba District Hospital	1205109DH	Mi1006W	33.45394	-8.91017	Mbeya	Mbeya	District Store	Government
ST. Bakhita	1207005	Mm1015	34.31216	-8.68196	Mbeya	Mbeya	FBO/Private Health Centre	FBO/NGO/VA
Chimala Hospital	1207020	Mm1002	34.03239	-8.86212	Mbeya	Mbeya	FBO/Private Hospital	FBO/NGO/VA
Igulusi	1207055	Mm1009	33.85629	-8.82183	Mbeya	Mbeya	Health Centre	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Mabadaga Dispensary	1207172	Mm1010	34.22142	-8.801222	Mbeya	Mbeya	Dispensary	Government
Madibira	1207173	Mm1007	34.79551	-8.21199	Mbeya	Mbarali	Health Centre	Government
Mbarali hospital	1207206	Mm1006	33.43384	-8.8917	Mbeya	Mbeya	Public Hospital	Government
Ukwavila Dispensary	1207333	Mm1005	34.15840	-8.71373	Mbeya	Mbeya	Dispensary	Government
Itende	1208104	Mm3011	33.42980	-8.91714	Mbeya	Mbeya City	Dispensary	Government
Iyunga	1208118	Mm3006	33.42423	-8.93657	Mbeya	Mbeya city	Health Centre	Government
RC Iyunga	1208290	Mm3009	33.40550	-8.92616	Mbeya	Mbeya City	FBO/Private Health Centre	FBO/NGO/VA
Ruanda prison	1208293	Mm3010	33.44733	-8.90116	Mbeya	Mbeya city	Dispensary	Government
Uhai Baptist	1208330	Mm3012	33.46844	-8.90796	Mbeya	Mbeya	FBO/Private Health Centre	Private
Mbeya Reginal	MBE101	Mm3007	33.44645	-8.9157	Mbeya	Mbeya Region	Regional Hospital	Government
Diaconical (Kirurumo)	201037	Am1010	35.84581	-3.37123	Moshi	Arusha	FBO/Private Health Centre	FBO/NGO/VA
Lendikinya Dispensary	201120	Am1001	36.36164	-3.34123	Moshi	Arusha	Dispensary	Government
Makuyuni Dispensary	201139	Am1011	36.10193	-3.55234	Moshi	Arusha	Dispensary	Government
Monduli District Hospital	201172	Am1005	36.44549	-3.29346	Moshi	Arusha	District Hospital	Government
Monduli District Hospital	201172DH	Am1005W	36.44549	-3.29346	Moshi	Arusha	District Store	Government
Mto Wa Mbu Health Centre	201178	Am1006	35.88991	-3.37421	Moshi	Arusha	Health Centre	Government
Tma Monduli Health Centre	201276	Am1008	36.45907	-3.34674	Moshi	Arusha	Health Centre	Other

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Arumeru	202007	Aa1006	36.78812	-3.37057	Moshi	Arusha	District Hospital	Government
Kikatiti	202093	Aa1001	36.94122	-3.38268	Moshi	Arusha	FBO/Private Dispensary	FBO/NGO/VA
Mbuguni	202159	Aa1007	36.91661	-3.55271	Moshi	Arusha	Health Centre	Government
Moivaro	202170	Aa1008	36.75215	-3.38561	Moshi	Arusha	Dispensary	Government
Nduruma	202190	Aa1004	36.79294	-3.48085	Moshi	Arusha	Health Centre	Government
USA River Health Centre	202284	Aa1005	36.84834	-3.37532	Moshi	Arusha	Health Centre	Government
AAR	203002	Aa2004	36.70201	-3.3735	Moshi	Arusha	FBO/Private Dispensary	Private
ICH	203071	Aa2006	36.68816	-3.36997	Moshi	Arusha	FBO/Private Hospital	Private
Kaloreni Health Centre	203078	Aa2010	36.68851	-3.36924	Moshi	Arusha	Health Centre	Government
Levolosi Health Centre	203123	Aa2011	36.67991	-3.37228	Moshi	Arusha	Health Centre	Government
Levolosi Health Centre	203123DH	Aa2011W	36.67991	-3.37228	Moshi	Arusha	District Store	Government
Mkonoo	203166	Aa2005	36.69806	-3.46348	Moshi	Arusha	Health Centre	Government
Themi	203272	Aa2012	36.70113	-3.39833	Moshi	Arusha	Health Centre	Government
Endabash	204043	Ak1011	35.61289	-3.5809	Moshi	Arusha	Health Centre	Government
Kambi Ya Simba	204080	Ak1008	35.80145	-3.27792	Moshi	Arusha	Dispensary	Government
Karatu Lutheran	204087	Ak1006	35.62670	-3.33762	Moshi	Arusha	District Hospital	FBO/NGO/VA
Mang'ola Chini	204145	Ak1004	35.33223	-3.52882	Moshi	Arusha	FBO/Private Health Centre	FBO/NGO/VA
Oldeani	204214	Ak1005	35.55479	-3.34843	Moshi	Arusha	Health	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
							Centre	
Rhotia Health Centre	204241	Ak1010	35.73771	-3.31047	Moshi	Arusha	FBO/Private Health Centre	FBO/NGO/VA
Regional Warehouse	ARU101	Aru101	36.69446	-3.36655	Moshi	Arusha	Warehouse	Government
Kilwa	801033	Lk1003	39.41242	-8.75838	Mtwara	Kilwa	District Hospital	Government
Masoko	801060	Lk1004	39.51584	-8.92974	Mtwara	Masoko	Health Centre	Government
Tingi health centre	801171	Lk1002	39.25585	-8.51027	Mtwara	Tingi	Health Centre	Government
Kilimahewa	802025	Ll1001	39.46347	-10.239553	Mtwara	Lindi	Dispensary	Government
Madangwa	802048	Ll1005	39.86058	-10.21438	Mtwara	Lindi	Dispensary	Government
Nyangamara	802146	Ll1003	39.59786	-10.37899	Mtwara	Nyangamara	Health Centre	Government
Nyangao	802147	Ll1004	39.29743	-10.3298	Mtwara	Nyangao	District Hospital	FBO/NGO/VA
Mbekenyera	805067	Lr1006	38.95007	-9.99111	Mtwara	Mbekenyera	Dispensary	Government
Namichiga	805123	Lr1002	38.99427	-9.91429	Mtwara	Namichiga	Dispensary	Government
Nanjaru	805129	Lr1010	39.10344	-9.71904	Mtwara	Ruangwa	Dispensary	Government
Nkowe Health Centre	805145	Lr1004	38.93725	-10.177612	Mtwara	Nkowe	Health Centre	Government
Ruangwa	805157	Lr1003	38.93602	-10.07248	Mtwara	Ruangwa	District Hospital	Government
Kinengene	806030	Ll2001	39.62216	-9.97442	Mtwara	Lindi	Dispensary	Government
Magereza	806051	Ll2006	39.71241	-10.01441	Mtwara	Lindi	Dispensary	Government
Town	806172	Ll2003	39.71492	-9.99894	Mtwara	Lindi	Health Centre	Government
Madimba	901051	Mm8005	40.30159	-10.39821	Mtwara	Madimba	Dispensary	Government
Nalingu	901139	Mm8001	40.30721	-10.33773	Mtwara	Mtwara rural	Dispensary	Government
Nanyamba	901157	Mm8003	39.80443	-10.69395	Mtwara	Mtwara rural	FBO/Private Health Centre	FBO/NGO/VA

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Kilidu Ii	902025	Mn1005	39.30582	-10.81002	Mtwara	NA	Dispensary	Government
Kitangari	902028	Mn1003	39.33700	-10.65812	Mtwara	NA	Health Centre	Government
Nambuga	902143	Mn1008	39.23685	-10.87384	Mtwara	NA	Dispensary	Government
Newala District Hospital	902167	Mn1004	39.27281	-10.95442	Mtwara	Newala	District Hospital	Government
Newala District Warehouse	902167DH	Mn1009	39.27281	-10.95442	Mtwara	Newala	Warehouse	Government
Chiungutwa	903014	Mm7008	38.98932	-10.89438	Mtwara	Masasi	Dispensary	Government
Mumbaka	903132	Mm7009	38.90599	-10.80084	Mtwara	Masasi	Dispensary	Government
Nagaga	903134	Mm7007	39.10719	-10.90076	Mtwara	Masasi	Health Centre	Government
Ndanda Hospital	903166	Mm7004	38.90608	-10.80077	Mtwara	Masasi	FBO/Private Hospital	FBO/NGO/VA
Kitama	904027	Mt1008	39.72600	-10.75731	Mtwara	Kitama	Dispensary	Government
Mahuta	904056	Mt1003	39.42463	-10.877243	Mtwara	Mahuta	Health Centre	Government
Namikupa	904145	Mt1007	39.62270	-10.84299	Mtwara	Namipuka	Health Centre	Government
Tandahimba	904184	Mt1004	39.63960	-10.753064	Mtwara	Mandahimba	District Hospital	Government
Tandahimba	904184DH	Mt1004W	39.63960	-10.75306	Mtwara	Tandahimba	Warehouse	Government
Sokoine	LIN101	Ll2004	39.70649	-9.973206	Mtwara	Lindi	Warehouse	Government
Mtwara regional warehouse	MTW101	Mtw101	40.17304	-10.28233	Mtwara	mtwara urban	Warehouse	Government
Bubinza	1902015	Mm9001	33.49938	-2.54385	Mwanza	Mwanza	Dispensary	Government
Igalukilo	1902101	Mm9013	33.77488	-2.41049	Mwanza	Mwanza	Health Centre	Government
Kabila	1902132	Mm9006	33.61691	-2.72872	Mwanza	Mwanza	Health Centre	Government
Kahangara	1902140	Mm9012	33.35337	-2.57891	Mwanza	Mwanza	Health Centre	Government
Kisesa A	1902186	Mm9007	33.05029	-2.55582	Mwanza	Mwanza	Health Centre	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Magu	1902215	Mm9008	33.43244	-2.5934	Mwanza	Mwanza	District Hospital	Government
Magu	1902215 DH	Mm9008W	33.43244	-2.5934	Mwanza	Mwanza	District Store	Government
Nassa	1902273	Mm9011	33.58505	-2.37373	Mwanza	Mwanza	Health Centre	Government
Nyangunge	1902323	Mm9014	33.17551	-2.53785	Mwanza	Mwanza	Health Centre	Government
Kakobe	1905143	Ms1006	32.32776	-2.37326	Mwanza	Sengerema	Health Centre	Government
Karumo	1905151	Ms1002	32.80584	-2.50099	Mwanza	Sengerema	Dispensary	Government
Kasisa Dispensary	1905159	Ms1003	32.51290	-2.487797	Mwanza	Sengerema	Dispensary	Government
Katunguru	1905164	Ms1007	32.67550	-2.50932	Mwanza	Sengerema	Health Centre	Government
Kishinda	1905188	Mg1005	32.29805	-2.67774	Mwanza	Geita	Dispensary	Government
Kome	1905194	Ms1004	32.48572	-2.35788	Mwanza	Sengerema	Health Centre	Government
Luhalanyonga	1905203	Ms1005	32.30979	-2.45292	Mwanza	Sengerema	Dispensary	Government
Nyehunge	1905334	Ms1011	32.30184	-2.52676	Mwanza	Sengerema	Health Centre	Government
Sengerema	1905353	Ms1008	32.65532	-2.63941	Mwanza	Sengerema	District Hospital	FBO/NGO/VA
Sengerema DC Pharmacy Store	1905353DH	Ms1012	32.62864	-2.65806	Mwanza	Sengerema	District Store	Government
Chigunga	1906074	Mg1009	31.93441	-2.81461	Mwanza	Geita	Dispensary	Government
Geita	1906082	Mg1008	32.22551	-2.87436	Mwanza	Geita	District Hospital	Government
Geita Distric Council	1906082DH	Mg1008w	32.22551	-2.87436	Mwanza	Geita	Warehouse	Government
Kasamwa	1906152	Mg1006	32.39514	-2.8511	Mwanza	Geita	Health Centre	Government
Katoro	1906163	Mg1011	31.93240	-3.00895	Mwanza	Geita	Health Centre	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Lubanga	1906199	Mg1003	32.38899	-2.63371	Mwanza	Geita	Dispensary	Government
Nkome	1906287	Mg1002	32.00815	-2.4995	Mwanza	Geita	Dispensary	Government
Nyang'wale	1906322	Mg1007	32.57924	-3.06083	Mwanza	Geita	Health Centre	Government
Bukumbi Camp	1907036	Mm0001	32.91021	-2.70624	Mwanza	Mwanza	Dispensary	Government
Idetemya	1907098	Mm0002	32.98514	-2.68471	Mwanza	Mwanza	Dispensary	Government
Mahando	1907218	Mm0006	32.80509	-3.24805	Mwanza	Mwanza	Dispensary	Government
Mbarika	1907228	Mm0011	32.83804	-2.91388	Mwanza	Mwanza	Health Centre	Government
Misasi	1907232	Mm0007	33.08762	-3.01442	Mwanza	Mwanza	Health Centre	Government
Misungwi	1907233	Mm0008	33.09549	-2.84749	Mwanza	Mwanza	District Hospital	Government
Misungwi	1907233DH	Mm0008W	33.09549	-2.84749	Mwanza	Mwanza	District Store	Government
Mwagala	1907249	Mm0010	33.06600	-2.71792	Mwanza	Mwanza	Dispensary	Government
Mwawile	1907270	Mm0012	32.89762	-3.25053	Mwanza	Mwanza	Dispensary	Government
Mwanza Regional Store	MWA101	Mwa101	32.90433	-2.51129	Mwanza	Mwanza Urban	Warehouse	Government
Kwai	401091	Tl1006	38.35625	-4.72748	Tanga	Lushoto	FBO/Private Health Centre	FBO/NGO/VA
Lushoto	401115	Tl1005	38.29677	-4.80532	Tanga	Lushoto	Public Hospital	Government
Malibwi	401138	Tl1002	38.38065	-4.706475	Tanga	Lushoto	Dispensary	Government
Mamba Mbelei	401140	Tl1003	38.39844	-4.8314	Tanga	Lushoto	Dispensary	Government
MNAZI	401191	Tl1007	38.29241	-4.79409	Tanga	Lushoto	Health Centre	Government
Msale	401201	Tl1004	38.36731	-4.6355	Tanga	Lushoto	Dispensary	Government
Soni Dispensary	401251	Tl1008	38.36973	-4.84533	Tanga	Lushoto	Dispensary	Government
Bungu	402018	Tk2005	38.38931	-5.02976	Tanga	Korogwe	Health Centre	Government
Korogwe	402085	Tk2004	38.45480	-5.13533	Tanga	Korogwe	District Hospital	Government
Korogwe	402085DH	Tk2004W	38.45480	-5.13533	Tanga	Korogwe	District Store	Government

Facility Name	HMIS_Code	GPS_Code	Longitude	Latitude	Zone	City	Facility Type	Operating Authority
Kwemkole	402107	Tk2009	38.67255	-4.882	Tanga	Korogwe	Dispensary	Government
Magoma	402129	Tk2010	38.58215	-5.223702	Tanga	Korogwe	Health Centre	Government
Mazinde	402161	Tk2002	38.21270	-4.81121	Tanga	Korogwe	Dispensary	Government
Mnyuzi	402193	Tk2003	38.58212	-5.2235	Tanga	Korogwe	Dispensary	Government
Mombo	402195	Tk2006	38.29309	-4.8876	Tanga	Korogwe	Health Centre	Government
Bombo	404014	Tt1007	39.11198	-5.06437	Tanga	Tanga	Regional Hospital	Government
Duga	404030	Tt1011	39.09275	-5.07856	Tanga	Tanga	Dispensary	Government
Kisosora	404078	Tt1009	39.09644	-5.07817	Tanga	Tanga	Dispensary	Government
Mafuriko	404124	Tt1013	39.10894	-5.0827	Tanga	Tanga	Dispensary	Government
Makorora	404135	Tt1012	39.10903	-5.08258	Tanga	Tanga	Health Centre	Government
Ngamiani	404225	Tt1006	39.09263	-5.07855	Tanga	Tanga	Health Centre	Government
Pongwe	404235	Tt1010	38.97614	-5.13458	Tanga	Tanga	Health Centre	Government
Kibirashi	407013	Tk1002	37.43238	-5.379509	Tanga	Kilindi	Dispensary	Government
Gitu	407039	Tk1001	37.28881	-5.57874	Tanga	Gitu village	Dispensary	Government
kwediboma	407102	Tk1009	37.51805	-5.38663	Tanga	Kilindi	FBO/Private Health Centre	FBO/NGO/VA
Mswaki	407204	Tk1003	37.57543	-5.43729	Tanga	Kilindi	Dispensary	Government
Songe RHC	407250	Tk1004	37.27351	-5.942979	Tanga	Kilindi	Health Centre	Government
Tunduli health center	407273	Tk1005	39.05634	-5.05655	Tanga	Kilindi	FBO/Private Health Centre	FBO/NGO/VA
Bombo hospital	TAN101	Tan101	39.11247	-5.06469	Tanga	Tanga	Warehouse	Government

Annex 2. LIAT Data Collectors

Region Visited	Name	Title	Organization
Mbeya Region	Vincent Manylizu	PHLA	SCMS
	Mariam Kileo	Nurse Officer	MNH
	Lucy Gasper Massawe	Clinical Officer	MDH
	Marwa Kitang'ita	SCMA	SCMS
	Ndavukai Elisha Mollel	Rasearch Assistant	MDH
Iringa Region	Wema Lawi	IT Manager	SCMS
	Dorothy Chegula	Nurse Officer	MDH
	Bertha Francis	Pharmacist	MUHAS
	Freddy	M&E Advisor	SCMS
	Thomas Simms	Advisor in Training	SCMS
Mwanza Region	Eric Shoo	SCMA- Mwanza	SCMS
	Bertha Solomon	Nurse Councelor	Ilala Municipal
	Costancia Marandu	Nursing Officer	MNH
	Nuran Idris	PHLA	SCMS
	Jaya Chimnani		JSI
Arusha Region	Sharon Peter	SCMA- Moshi	SCMS
	Baraka Nyauligo	Pharmacist	Community Pharmacy
	Jerome Ngowi	Pharmacist	NTLP
Tanga Region	Richard Silumbe	Pharmacist	MUHAS
	Michael Francis Itala	Nursing Officer	Aga Khan Hospital
	Johanitha Joram	Research Assistant	Kongwa District
	Zahir Fadhili	Pharmacist	Kisarawe District Hospital
Morogoro Region	Richard Makala	SCMA	SCMS
	Reginald A. Magehema		Lugalo Hospital
	Emmanuel Shayo	Lab LA	SCMS
	Selina Richard Shangari	Registered Nurse	MNH
Mtwara Region			
	Godbless Mariki	PHLA	SCMS
	Emma Olotu	Site Manager	UMATI- Mnazi Mmoja

Region Visited	Name	Title	Organization
	Jennifer Tuddenham		JSI
Lindi Region	Emmanuel Nkiligi	Data Manager	NTLP
	Hassan Msemo	Pharmacist	MUHAS
Dar es Salaam Region	Ernest Neke	Pharmacist	Community Pharmacy
	Elias Masumbuko	Pharmacist	Tukuyu District Hospital
	Elibariki Silayo	Clinical Officer	
	Merina Vicent Shaidi	Research Assistant	MNH
	Davance Leonard	Pharmacist	Mbeya Referral Hospital
	Shariffa Msango	Clinical Officer	Zinga Dispensary

Annex 3. LSAT Participants

	NAME	TITLE	ORGANIZATION
	Jerome Ngowi	Program Pharmacist	NTLP
	Emmanuel Nkiligi	Data Manager	NTLP
	Kapolya Mzumya	DTLC Misungwi	Misungwi District
	Dr Neema Kapalata	RTLC Temeke	Temeke Municipal
	Dr. Fractor Mhomisol	RTLC Iringa	Iringa Region
	Ally Fupi	DTLC Mbulu	Mbulu District
	Said Shaban	DTLC Dodoma Municipal	Dodoma Municipal
	Alphonce Shirima	DTLC Hai	Hai District
	Said Khamis	RTLC Pemba	Pemba
	Julias Obeidi	RTLC Unguja	Unguja
	Elias Masumbuko	Pharmacist	Tukuyu District Hospital
	Dr. Magnus Ndolichimpa	TB/ HIV Coordinator	ICAP
	Godbless G. Mariki	Public Health Logistics Advisor	JSI/SCMS
	Vicent Manyilizu	Public Health Logistics Advisor	JSI/SCMS
	Fredrick Ruta	M&E Advisor	JSI/SCMS
	Thomas Simms	Advisory Trainee	JSI/SCMS
	Jaya Chimnani	Consultant	JSI/SCMS
	Joy Kamunyori	Consultant	JSI/SCMS
	Nuran Idris	Public Health Logistics Advisor	JSI/SCMS
	Emmanuel Shayo	Public Health Logistics Advisor	JSI/SCMS
	Roland Muller	Representative	GLRA
	Sigfrid Mroso	Pharmacist	PASADA
	Richard Silumbe	Pharmacist	MUHAS

Annex 4. LIAT and LSAT Timeline

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		July 19	*July 20*	*July 21*	*July 22*	*July 23*	*July 24*
0		Leave DC	Arrive in Dar	Prep for LIAT with TZ Team	Prep for LIAT		
	July 25	*July 26*	*July 27*	*July 28*	*July29*	*July 30*	*May 31*
1	LIAT Training	Training LIAT	Training LIAT	Pilot Test/Make Changes	Pilot Test Discussion/ Finalize Tool	Finalize EpiSurveyor Tool (?)	Teams Travel for data collection
	Aug 1	*Aug 2*	*Aug 3*	*Aug 4*	*Aug 5*	*Aug 6*	*Aug 7*
2	Data Collection	Data Collection	Data Collection	Data Collection	Data Collection		
	Aug 8	*Aug 9*	*Aug 10*	*Aug 11*	*Aug 12*	*Aug 13*	*Aug 14*
3	Data Collection Data Cleaning (for data from Week 2)	Data Collection Data Cleaning	Data Collection Data Cleaning	Data Collection Data Cleaning	Data Collection Data Cleaning	Teams return to Dar	
	Aug 15	*Aug 16*	*Aug 17*	*Aug 18*	*Aug 19*	*Aug 20*	*Aug 21*
4	Data Cleaning	Data Cleaning/Data Analysis	Data Analysis	Data Analysis	Data Analysis/LSAT Prep		
	Aug 22	*Aug 23*	*Aug 24*	*Aug25*	*Aug 26*	*Aug 27*	
5	LSAT Prep	LSAT	LSAT	LSAT/LIAT Results review	LSAT/LIAT presentation	Consultants leave	

Annex 5. LSAT Answers

SECTION I: Organization and Staffing

1. Does the national level have a logistics management unit?
   ❑ Yes ☒ No

Comments: NO. There is no specific unit. But they have mechanisms to implement logistics activities: Not formal called logistic unit. This function is done by the program pharmacist in collaboration with other staff at the program level (e.g. Data people, supplies officer).Other activities related to logistics are discussed together with MSD and PSU

If no, please check NO in questions 2 a–h.

2. Is the logistics management unit fully responsible for the following activities? (If not, note the departments or positions responsible for each logistics task.):

a. managing and using the logistics management information system?
   ❑ Yes ❑ No If no, who is responsible?

Comments: There is no formalized unit, but NTLP is responsible for management of drugs. There are reporting forms which include information on SOH and total number of patients. (e.g- TB-07) or the drug calculation form.

b. forecasting quantities needed?
   ☒ Yes ❑ No If no, who is responsible?

Comments: NTLP does it every year for 1st line commodities in collaboration with GDF. Forecasting for second line is done by themselves

c. procurement?
   ❑ Yes ☒ NoIf no, who is responsible?

Comments: Done by Procurement Management Unit of the MOSW with MSD and GDF for first line medicines. 2nd line done by MSD. TFDA offers registration/clearance of commodities. Leprosy medicines are being bought and cleared by WHO and stored at MSD.

d. inventory management, storage, and distribution?
   ❑ Yes ☒ No If no, who is responsible?

Comments: This is done by MSD, program people are invited to participate in the stock taking process yearly. The program develops the distribution list and hands it to MSD for distribution.

e. product selection?
   ☒ Yes ❑ No If no, who is responsible?

Comments: YES. Program does it in collaboration with GDF based on treatment guidelines.

SECTION I: Organization and Staffing

f. staffing of logistics positions?
        ❑Yes   ☒ No   If no, who is responsible?

Comments: Conducted by NTLP. Apply for position to the MOHSW. Partners support in staffing.

g. budgeting for the logistics system?
        ☒ Yes ❑   No   If no, who is responsible?

Comments:

h. supervision and logistic staff development?
        ❑ Yes ☒   No   If no, who is responsible?

Comments: The supervision is broader and logistics is only a component of it. There is no supervision specific to logistics.

3.   Are there documented guidelines for:

a. managing and using the logistics management information system?
        ☒ Yes ❑   No

Comments: Management and control of tuberculosis and leprosy and drugs and supplies 2000. This document is outdated and has not been well distributed. Many of the RTLC and DTLC do not know about it .

b. forecasting quantities needed?
        ☒ Yes ❑   No   Comments: YES, GDF guidelines are used

c. procurement?
        ☒ Yes ❑   No   Comments: YES other units of the MOH

d. inventory management, storage, and distribution?
        ☒ Yes ❑   No   Comments:

e. product selection?
        ☒ Yes ❑   No   Comments: Done by GDF

f. staffing of logistics positions?
        ❑ Yes ☒   No   Comments:

g. budgeting for the logistics system?
        ❑ Yes ☒   No   Comments: Done by MOH

SECTION I: Organization and Staffing

h. supervision and staff development?
      ☒ Yes ❑   No   Comments: Supervision checklist that includes logistics/commodity management functions as well. Meant to be used by DTLC and RTLC.

4. Is there a central-level position dedicated to logistics?

  ❑ Yes   ☒   No   Comments:

If no, skip to question 6.

5. Does the logistics officer(s) have the same level of authority for decision making as other functional unit heads?
    ❑   Yes   ❑   NoComments:

6. What activities are used to coordinate key logistics tasks among those responsible for logistics?

❑ none   ❑   formal meetings
      ☒ joint work plans   ☒   written communications
      ❑   department meetings   ❑   other_____

At the national level.

7. How many personnel positions have key logistics tasks at the Central level?

3 (data analyst, pharmacist and a procurement person)

8. How many of the positions with key logistics tasks are currently filled? If they are not filled, why not?

All current positions are filled

9. Provide or map an organogram that includes the relationship among key stakeholders, including government units, donors, other cooperating agencies, and other supply chains (in terms of responsibilities for logistics activities). *(It is advisable to request this document in advance, before the actual LSAT activity.)*

10. Does the logistics system have a strategic plan that covers the next 1–3 years? Please attach.
      ☒   Yes ❑   No   Comments: have a 6 year plan

SECTION I: Organization and Staffing

11. What issues outside the supply chain impact the functioning of the supply chain?
(Note: Include major political, cultural, or economic factors, such as political events, labor disputes, etc.)

Human resource shortage and limited infrastructure

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12. Is there a national policy for TB and Leprosy program?
☒ Yes ❑ No Comments:

If no, skip to question 19.

---

13. Does the national policy for TB and Leprosy address uninterrupted supply for TBL commodities?
Please explain.
☒ Yes ❑ No Comments:

---

14. Does the policy influence the annual planning process? Please explain.
☒ Yes ❑ No Comments:

---

15. Are there laws and regulations that promote the importation or local production of TBL commodities?
If yes, give examples.
☒ Yes ❑ No Comments:

---

16. Are there laws and regulations that hinder the importation or local production of TBL commodities? If yes, give examples.
❑ Yes ☒ No Comments: Though MOHSW imports drugs

---

17. Are there policies or other restrictions that limit or encourage client access to services or commodities?
☒ Yes ❑ No Comments: Free Tb services, drugs, sputum tests
Other restrictions= infrastructure

In no, skip to question 19.

SECTION I: Organization and Staffing

18. Describe the policies and/or other restrictions.

Limited human resources

19. How are policymakers engaged in improving access to TBL commodities?
Community management/ home based DOTs
Free services
Social Mobilization (Sensitization of the community during Tb day through media, use of posters)

20. Other comments on organization and staffing:

WEAKNESSES	STRENGTHS
No formal LMU at NTLP. There is no formalized system Guidelines need to be updated Guidelines not available/accessible to all channel partners Limited human resources for completing all tasks related to logistics Regional/District pharmacist not part of the system; System is still vertical and not integrated	Access to free TB and leprosy commodities Presence of some guidelines for TB program Some coordination among different levels of the system Information flow from health facilities to district to regional

RECOMMENDATIONS

Integrate TBL Program with RCHMT/CHMT activities and other program areas of the integrated system
Establish a formal Logistics Management Unit at NTLP
Update current NTLP guidelines and distribute them to all levels of the system

SECTION II: Logistics Management Information System (LMIS)

1. Is there a logistics management information system?
   ☒ Yes ❑   No   Comments:

If yes, go to question 3.

2. Is logistics information collected through another information system (e.g., HMIS)? Describe briefly.
   ❑   Yes ❑   No

3. Does the information system (LMIS, HMIS, other) include:

   a. stockkeeping records (e.g., inventory control cards, bin cards, stock registers) at all levels?
      ☒ Yes ❑   No   Comments:

   b. requisition and issue records (e.g., bills of lading, shipping records, requisition/issue vouchers) at all levels?
      ☒ Yes ❑   No   Comments:

   c. dispensed-to-user records at service delivery points?
      ❑ Yes ☒   No   Comments: Sometimes they improvise by adding up all treatment cards for individual patients.

   d. summaries of consumption data at levels above service delivery points (e.g., districts, regions, central, etc.)?
      ❑ Yes ☒   No   Comments: Use issues data to estimate consumption

   e. stock on hand (at all levels)?
      ☒ Yes ❑   No   Comments:

4. Do information system reports at all levels of the system show:

   a. inventory balance (stock on hand)?
      ✠ Yes ❑   No   Comments:

   b. quantity dispensed or **issued** during a specified reporting period?
      ☒ Yes ❑   No   Comments: Only issued not dispensed data from the store to the dispensing unit. (This data however is not reported to the higher level).

   c. losses and adjustments?
      ❑ Yes ☒   No   Comments:

   d. quantities received?
      ☒ Yes ❑   No   Comments:

SECTION II: Logistics Management Information System (LMIS)

5.   Describe the flow of logistics information from the health facility to central level. Please include information about forms used, frequency of reporting, who's responsible, and where data is aggregated. Attach a diagram.

Facilities don't report. DTLC visits all facilities and collects data on a monthly basis.
Data is collected on SOH, total number of patients and regimens. DTLC then compiles a report for his district and submits it to RTLC.
RTLC compiles all reports from the district and creates a report with SOH and submits his report to NTLP with all district reports. This is done on a quarterly basis.

Forms submitted include: Drug calculation Form, Patient Notification Form, Stock Position Form, Treatment Outcome form.

6.   Do LMIS or other information system reports received at the central level provide information on stock status at the health facility level (i.e., do central-level staff have accurate routine information on which facilities are stocked out, understocked, adequately stocked, or overstocked)? Please explain.
   ❑   Yes   ☒   No   Comments:

They see the overall picture of the district, but not the individual facilities.

7.   How often are reports sent to each higher level of the system? Map the report flow.

Facility to District: Monthly (DTLC visits facilities monthly). Only those who do diagnosis, the rest are visited quarterly.
District to Region: Quarterly
Region to Central - Quarterly

8.   How do managers (e.g- national level, RTLCs, DTLCs) monitor reporting rates and follow-up to obtain missing logistics reports?

By supportive supervision or communication

9.   What is the approximate percentage of information system reports received according to reporting schedule to be used for logistics decisions (ordering, distribution, etc.) at the following levels:
        a. central? --80%
        b. regional? –70%
        c. district? – 100%
        d. If below 100% at any level, explain why facilities don't report or don't report on time.
If regional DTLC quarterly meetings are late, reports will be late

SECTION II: Logistics Management Information System (LMIS)

10. Are information system records reconciled against physical inventories at each level?

❑ Yes ☒ No. The tool has a weakness in that it has no place for losses and adjustments. (It also has no place for reporting quantities used).

      a. If yes, how is this done?

      b. How often?

11. Is the information system computerized at the following levels:

      a. central?
        ✠ Yes ❑ No   Comments:

      b. regional?
       ❑ Yes ✠ No   Comments:

      c. district?
       ❑ Yes ✠ No   Comments:

      d. service delivery points?
       ❑   Yes ✠ No   Comments:

If no to questions 11 a–d, skip to 13.

12. Briefly describe the functions and processes that are computerized.

Access and Excel Database

13. Is external assistance (from outside the national program) provided to manage the information system? Describe.

Not directly. WHO and GDF conduct supervision visits and assessments of information flows and provide recommendations to the program.

14. Is the logistics information system used to monitor and evaluate the program's performance?
      ✠ Yes ❑ No   Comments:

Case notification and evaluation at the central level and address chronic stockouts up until the district level.

15. How is logistics data recorded, managed, analyzed, and used at each level?

Facility: recorded on stock ledger and patient registers
District: compilation of recorded data from facilities in TB District Register.
Bin cards, issue vouchers, electronic TB registers and district ledgers.
Region: Regional ledgers, bin cards, issue vouchers, ETR, National Bill of lading

SECTION II: Logistics Management Information System (LMIS)

16. What indicators related to logistics and/or product availability does the information system track (e.g., stockout rate, percentage of reporting, rational prescribing practices, etc.)?

Stockout rate, percentage reporting (not really)

Who tracks these indicators? How often?

All levels, SDPs- anytime, District- monthly, Regional and National- Quarterly

17. What decisions are based on information system reports?
✄ forecasting   ✄ procurement   ❑ transport/delivery   ❑ scheduling supervisory visits
    ✄ inventory management   ✄ how much to resupply_____❑ other

18. Are logistics data used at each level of the system as appropriate for:

a. continuous monitoring of stock balances?
central?
       ✄ Yes ❑   No   Comments:

regional?
       ✄ Yes ❑   No   Comments:

district?
       ✄ Yes ❑   No   Comments:

service delivery point?
       ✄ Yes ❑   No   Comments:

b. calculating quantities for resupply?
central?
       ✄   Yes ❑   No   Comments:

regional?
       ✄ Yes ❑   No   Comments:

district?
       ✄ Yes ❑   No   Comments:

service delivery point?
       ✄ Yes ❑   No   Comments:

19. What feedback mechanisms are in place to channel logistics information back to lower levels?
    ✄ telephone   ❑ reports   ✄ meetings   ✄ supervisory visit
    ❑ other   ❑ none
    Comments:

20. Are issues data or dispensed-to-user data cross-checked against other data sources (e.g., service statistics, demographic surveys, etc.)?
    ✄   Yes ❑ No   Comments: Issues data is cross-checked against services data (# of patients)

SECTION II: Logistics Management Information System (LMIS)

If no, skip to 22.

21. a. What type of data are they checked against?

⛶ service statistics (e.g. number of patients) ❑ demographic statistics (e.g. prevalence rates) ❑ survey data ❑ supervisors reports

❑ other_____

b. How often are they checked against each data type?

⛶ quarterly ❑ semi-annually ❑ annually ❑ other_____

c. Who does the cross-checking?

RTLC and Central Unit

22. a. Is logistics information provided to the appropriate decision makers for logistics planning
   (e.g., National TB and Leprosy Program, Ministry of Health and Social Welfare, Ministry of Finance, GDF, USAID, WHO (Stop TB Program), World Bank, NGOs)?

    X Yes ❑ No Comments:

b. What information is provided? Stock status (SOH, stockout rates), quantity to be ordered, quantity issued.

c. Who provides the information? DTLC, RTLC, and NTLP

d. Who receives the information? RTLP, NTLP and other international organizations

e. How often?

⛶ monthly ⛶ quarterly ⛶ semi-annually ⛶ annually ⛶ other _when needed

f. How is the information used?

 Forecasting, budgeting, quantification and procurement

23. Other comments on the LMIS:

STRENGTHS	WEAKNESSES
There is a reporting system from the district to the national level Reporting tool provides stock status of the drugs at the district level (SOH, number of patients and regimens) The reporting tool helps in budgeting, reporting, procurement, forecasting and quantification. The tools are available at the district level	There are no reporting tools at the SDPs. Only issue vouchers for ordering are available There are delays in reporting from the district to the higher level The reporting tools do not include losses and adjustments There is no regular feedback mechanism from higher levels to the lower levels No dispensing register at the SDPs (i.e- no consumption data being recorded)

RECOMMENDATIONS

Reporting tools should be made available at all health facilities
Reporting tools should be redesigned to include key logistics information including, SOH, losses and adjustments, and quantities used (consumed).
Feedback mechanisms should be improved in order to avoid reporting delays
Dispensing registers should be made available at the SDPs

SECTION III: Product Selection

1. Is there a national drug policy document?
    ✠ Yes ❑ No Comments:

If no, skip to question 4.

2. a. When was the document published? Attach a copy.
    b. Who developed it?
    c. How often is it updated?
    d. Who receives it?
    e. How is it used? Guides the use in national level procurement.

More comments should be obtained from the Program

3. Does the national drug policy contain written guidelines for donation of products?
    ✠ Yes ❑ No Comments:

4. Is duty tax imposed on imported drugs or products for TB and leprosy commodities?
    ❑ Yes X No Comments:

5. Are donated commodities for TB and leprosy exempt from duty tax?
    ✠ Yes ❑ No Comments:

6. How are new drugs or products for TB and leprosy registered?
Registered by TFDA, done through biowaving if such drugs are WHO-prequalified or registered by other stringent regulatory authority.

7. Does the program have a written policy for maintaining continuity of brands and avoiding unnecessary duplication of interchangeable products?
    ✠ Yes ❑ No Comments:

8. Is there a national essential drug list? If yes, please obtain a copy of the list ahead of time.
    ✠ Yes ❑ No Comments:

no, skip to question 13.

SECTION III: Product Selection

9. Are TB and leprosy products included on the essential drug list?
    ☒ Yes   ❑   No

10. What criteria are used to select a product for the list?
prevalence of the disease
cost effectiveness

11. To which levels of the system is the national essential drugs list officially distributed?
    ☒ central   ☒ regional
    ☒ district   ☒   service delivery point

12. Is the list used for product selection? If yes, explain how it is used.
Yes, it allows room for most cost effective medicines to be used

13. Other comments on product selection:
There should be regular review and distribution of NEMLIT
Effects of political/external influence/external pressure. Conflicts of interest from donors (e.g if there are changes in the regimen)

STRENGTHS	WEAKNESSES
Existence of national drug policy Existence of NEMLIT which include TB/L medicines Drugs need for treatment of TB and Leprosy are part of the overall treatment regimens Existence of national drug policy	

RECOMMENDATIONS

Funds should be increased to DTLCs to enable them for supervisions and monitoring
Regularly review NDP and NEMLIT and distribute accordingly
Procurement should based on the prevalence and problem rather than external pressure and interest

SECTION IV: Forecasting

1. Describe the forecasting process for TB and Leprosy commodities

a. Who initiates it? **NTLP**

b. When does it take place? **Annually with GDF. Report info to WHO on usage, SOH, patients on treatment**

c. How long does the process take? 3 – 4 weeks

2. Are forecasts developed using:

a. dispensed-to-user data?
       ❑   Yes ☒ No Comments:

b. distribution/issues data?
       ☒ Yes ❑   No   Comments:

c. stock on hand at all levels?
☒ Yes ❑   No   Comments:

3. Are forecasts developed using the following:

a. demographic data or disease prevalence/morbidity?
       ❑ Yes ☒ No Comments:

b. service statistics (e.g- number of patients)?
       ☒ Yes ❑   No   Comments:

4. Are forecasts validated by comparing previous estimated consumption with actual consumption?
       ❑   Yes ☒ No   Comments:

5. How close have most forecasts been to actual consumption?
❑ less than 0–10%   ☒ between 10–25%
    ❑ between 25–50%   ❑ more than 50% discrepancy

6. a. How many products had serious forecasts discrepancies in the past 2 years (+/- 25%)?
None

b. Which ones?
   None

c. Which products had the smallest forecast discrepancies?

   All

7. What other factors are considered in the preparation of forecasts (e.g., consolidating decentralized forecasts or quantifications, seasonal and regional variations, standard treatment guidelines, national essential drug list, stockout periods, etc.)?

None

SECTION IV: Forecasting

8. Do forecasts take into account programmatic plans (e.g., expansion of health facilities, training, Information, Education and Communication (IEC) or behavior change campaigns, other organization's activities, etc.)? Describe.

Yes, targets set by the NTLP are used.

9. a. Is technical assistance provided to develop forecasts?
    ☒ Yes   ❑ No

b. If yes, by whom?

GDF for first line TB medicines
WHO conducts the quantification for Leprosy medicines

10. What is the role of regional or lower levels in the forecasting process?
Sending reports to the central level

11. How does the private sector participate in the forecasting process?
None. DTLC collects the data

12. Are forecasts updated at least annually?
    ☒ Yes ❑   No   Comments: **Annual forecasts are developed**

13. Are forecasts prepared on a schedule that coincides with local budgeting and procurement cycles?
    ❑ Yes ☒ No   Comments:

14. Are long-term (e.g., 3 or more years) forecasts prepared?
    ❑   Yes ☒   No   Comments:

15. Does the NTLP/MOH and/or other donors cost out forecasts and incorporate them into the budget planning?
Explain.

No, the program is operating on grants and donations

16. Other comments on forecasting:

STRENGTHS	WEAKNESSES
There is a buffer at the central level that is forecasted for, however due to delays in delivery, this buffer is not provided to lower levels.	The program is highly dependent on donor funds; this can pose challenging in case the donor pulls out thus patients will risk not having access to drugs.
Program has defined a period for ordering drugs.	Forecasts do not include data on total consumption
Quantification is conducted centrally, thus less expensive and more accurate and gives the program more control of the situation.	Enough commodities are not always available to provide 100% buffer at all levels
Forecasts are accurate to a large extent.	
100% buffer is included in the forecasts	

RECOMMENDATIONS

Need to develop forecasts for more than one year which will be reviewed periodically.

Seek means of having the government be more involved in TB issues for the sake of sustainability and uninterrupted services.

SECTION V: Obtaining Supplies/Procurement

Who is responsible for procurement planning and ordering and scheduling of shipments (e.g., logistics unit, procurement unit) at appropriate levels?

Procurement Planning: NTLP in collaboration with GDF do the procurement plan, with technical assistance from MSD

Ordering:
At Regional Level: RTLC and Regional Pharmacist
At District Level: DTLC and District Pharmacist
At Facility Level: There is a focal person or pharmacist or designated person for ordering

Scheduling of Shipments: NTLP provides shipment schedule to MSD; MSD distributes as per schedules to Zonal Level and then to Region and the region to the district level. DTLC/District pharmacist authorize distribution basing on the availability

Describe the coordination between staff or unit(s) responsible for logistics activities and procurement staff.

MOHSW/NTLP - Focal Person at NTLP – PSU – PMU – MSD - MNT

3. Are short-term procurement plans based on forecasted needs?
❑ Yes   ❑ No   ❑ NA   Comments: Yes, incase of shortage, emergency orders are based on forecasted needs

4. Do these procurement plans take into account the following logistics system elements:

a. current inventory levels (stock on hand)?
          ❑ Yes   ❑ No ❑ NA Comments: Yes

b. consumption (dispensed to user or issues)?
          ❑ Yes   ❑ No ❑ NA Comments: Yes, using issue data

    c. losses and adjustments?
     ❑ Yes   ❑ No ❑ NA Comments: It takes it from the store ledger at different level of channel partners

    d. required order lead times of suppliers/donors?
❑ Yes   ❑ No ❑ NA Comments: yes

    e. established stock levels, if relevant (i.e., maximum and minimum levels)?
     ❑ Yes   ❑ No ❑ NA Comments: Yes, H/C 2 and 1 Buffer, MOS, District & Regional Facilities 3 MOS/Running Stock plus 3 Buffer, National Warehouse 12 Running and Buffer 12

    f. shipment and handling schedules?
     ❑ Yes   ❑ No ❑ NA Comments: Yes, with support from MSD from the Central to Zonal; and from the Region to Districts – DMOs or Supervision vehicles from RCHMT/CHMT;

SECTION V: Obtaining Supplies/Procurement

from district to the facilities there are distribution routes of DMO or DTLC can distribute to fill the distribution gap with a motorcycles

g. need for safety stock? Yes
❑ Yes   ❑ No ❑ NA   Comments:

---

5. Are procurement plans responsive to other factors related to product supply and demand (e.g., demographic trends, program changes or expansion, IEC campaigns, etc.)?
❑   Yes   ❑   No   Comments:
Requirement are calculated basing on requirements, e.g. if there is an upcoming national campaign

---

6. Are procurements limited to:
a. pre-qualified suppliers?
❑ Yes   ❑ No   Comments: Yes there is a committee that screens the vendors e.g.TFDA, MOHSW-PMU

b. products on the national essential drugs list?
❑ Yes   ❑ No   Comments: Yes

---

7. In general, are the correct amounts of all products procured and obtained at the appropriate time, at the following levels:
a. central?
❑ Yes ❑ No ❑ NA   Comments: Yes

b. regional?
❑ Yes ❑ No ❑ NA   Comments: Yes

c. district?
❑ Yes ❑ No ❑ NA   Comments: Yes

d. service delivery point?
❑ Yes ❑ No ❑ NA   Comments: Yes

Specify the products, if any, that do not arrive in a timely manner, or in appropriate amounts, and why.

N/A

---

8. a. What is the procedure for adjusting procurement plans in case of a budget shortfall?

There has never been a shortfall in the budget. What are the procedures and time frames for ordering products from suppliers and donors?

GDF/NTLP do assessment and thereby follows annual forecast and ordering is done annually

c. Do these take into account trade, regulatory, and currency restrictions? How?

Regulatory Yes; Trade - we rely on GDF approved suppliers; no currency restrictions as its done by the donor

SECTION V: Obtaining Supplies/Procurement

9. What is done to monitor/manage the coordination of procurement plans among suppliers/donors?
GDF does the procurement plans and monitors it; NTLP sends requirements and monitors drugs availability and sends signals to GDF to do procurements

10. a. Is pipeline status regularly monitored so procurement decisions can be made to avoid stockouts?
   ❑ Yes   ❑ No   Comments: Yes locally by NTLP and by the donor – GDF and WHO

   b. If yes, who does this and how? By supervision and reports…At national level MSD & NTLP, and at Regional Level – RCHMT (regional pharmacist and RTLC) and CHMT at the district level and a designated person at the health facility level

c. How effective has this monitoring been? Explain. Availability of drugs, ordering and replenishing of tock has been possible

11. Does the procurement unit or persons responsible for procurement:

a. write and issue tenders?
   ❑ Yes   ❑ No   Comments: GDF does all; MSD does for 2nd line products only to approved suppliers e.g. IDA: MSD receives Leprosy drugs only and distribute, the rest of the work is done by WHO

b. evaluate bids?
   ❑ Yes   ❑ No   Comments:

c. monitor supplier performance?
   ❑ Yes   ❑ No   Comments:

12. Does the program have written procedures for ensuring that products meet defined standards of quality? Please explain.
   ✠ Yes   ❑ No   Comments: Yes, Orders TFDA approved drugs

13. What are the procedures for quality assurance, who is responsible for it, and how often are they done? Not attempted

14. Is there a procedure for recording and reporting complaints about product quality to suppliers? Please explain.
   ❑ Yes   ❑ No   Comments: Not attempted

SECTION V: Obtaining Supplies/Procurement

15.   What other actions are carried out to ensure product quality? Not attempted

16. Other comments on procurement: Not attempted

STRENGTHS	WEAKNESSES
Continuous availability of adequate drugs in all levels Existence of defined procurement procedures Limited stock of expired drugs at all levels	Donor dependence on budget for procuring TBL drugs Global shortage of drugs (Streptomycin) led to drug resistance Supplier – MSD lead-time is too long; Short Shelf life of FDC's does not compliment procurement plans and schedules of shipment
RECOMMENDATIONS	

Strengthen integration of TBL Services into CCHP and RHMT Plans (e.g. supervision, transportation/distribution of TB products)
Ensure country ownership by injecting local funds for sustainable drug's availability
Strengthen partnership on logistics management within NTLP

SECTION VI: Inventory Control Procedures

1. Specify what type of inventory control system is used (e.g., push, pull, combination of push and pull etc.) and describe the system. Draw/attach a diagram showing the relationships between the various levels.

```
            ┌──────────┐
            │   NTLP   │
            └──────────┘
                 │
  Pull system    │
                 ▼
            ┌──────────┐
            │  Region  │
            └──────────┘
                 │
  Pull system    │
                 ▼
            ┌──────────┐
            │ District │
            └──────────┘
                 │
  Push System    │
                 ▼
            ┌──────────┐
            │   SDP    │
            └──────────┘
```
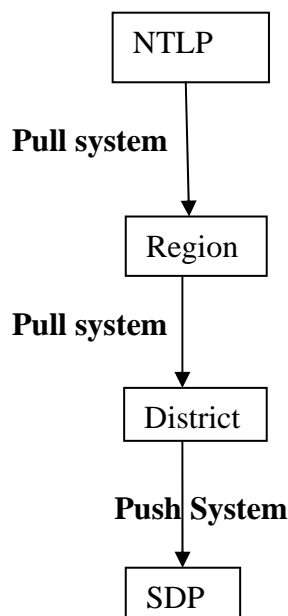
2. What products are considered by the program to be in full supply?

4 FDC and 2 FDC (Adult)

3. Are there guidelines and established policies for maximum and minimum stock levels at which full supply products should be maintained (please note current maximum and minimum levels in comments section)?

a. At the central level?
    ☒ Yes   ❏ No ❏ NA Comments: 24 – 12 months (Max – Min)

    b. At the regional level?
    ☒ Yes   ❏ No ❏ NA Comments: 6 – 3 months (Max – Min)

    c. At the district level?
    ☒ Yes   ❏ No ❏ NA Comments: 6 – 3 months (Max – Min)

d. At the service delivery point level?
    ☒ Yes   ❏ No ❏ NA Comments: 3 -2 months (Max – Min)

SECTION VI: Inventory Control Procedures

4.   a. Are the inventory control guidelines for full supply products respected at all levels so stock levels generally fall between maximum and minimum?
  ❑ Yes   ☒ No   ❑ NA

b. If no, why not?
Delays in delivery and clearing result in rationing the available supplies
Products delivered with short shelf life thus large quantities cannot be stored at each level

5. a. Are stock levels (maximum and minimum) for full supply products reviewed periodically?
  ☒ Yes   ❑ No   ❑ NA

Reviewed every five years, however this has not been documented in the guidelines.

  b. Do reviews take into account changes in transport and information availability?
  ❑ Yes   ☒ No ❑ NA

6.   How are products that cannot be maintained in full supply allocated at the following levels:
a. central?   Comments:

Same procedures for ordering are used, no additional efforts in place.
  b. regional?   Comments:

Distributions and re-distributions are conducted in facilities with very low stocks
  c. district?   Comments:

Rationing
  d. service delivery points?   Comments:
Rationing

7.   Are there written procedures for the redistribution of over-stocked supplies?
  ❑ Yes   ☒ No   Comments:

8.   How are stock imbalances handled by supervisors/managers at the following levels:
a. central?   Comments:
Stock in the regions is redistributed amongst themselves

b. regional?   Comments:

Redistributions
  c. district?   Comments:

Redistributions

d. service delivery points?   Comments:

Rationing the available supplies

SECTION VI: Inventory Control Procedures

9. Does the program have a policy of storing and issuing stock according to first-to-expire, first-out (FEFO) inventory control procedures at all levels?
☒ Yes   ❑ No   Comments:

   If no, what system is used?

10. In practice, does the program manage and issue stock according to FEFO inventory control procedures at all levels? Describe.
☒ Yes   ❑ No   Comments:

11. Are damaged/expired products physically separated from inventory and removed from stock records at the following levels:
   a. central?
   ☒ Yes   ❑ No   ❑ NA   Comments:

   b. regional?
   ☒ Yes   ❑ No   ❑ NA   Comments:

   c. district?
   ☒ Yes   ❑ No   ❑ NA   Comments:

   d. service delivery point?
   ☒ Yes   ❑ No   ❑ NA   Comments:

12. Note the approximate quantities of products that expired within the past two years.

        Don't know

13. Does the program have a system for tracking product losses and other adjustments?
   ❑ Yes ☒ No   Comments:

SECTION VI: Inventory Control Procedures

14. a. Are there significant losses and adjustments?
   ❑ Yes ☒ No   Comments:

   b. If yes, how are they investigated?
   ❑ Yes ❑ No   Comments:

   c. Are appropriate actions taken to prevent recurrence?
   ❑ Yes ❑ No   Comments:

15. How does each level of the system calculate resupply quantities?

a. central?   Comments:

   Number of TB cases – stock on hand

b. regional?   Comments:

   Number of TB cases – stock on hand

c. district?   Comments:

   Number of TB cases – stock on hand

d. service delivery points?   Comments:

   Number of TB cases – stock on hand

16. Have stockouts occurred for any product in the last 12 months at the following levels:
   a. central?
   ☒ Yes   ❑ No   ❑ NA   Comments:

   b. regional?
   ☒ Yes   ❑ No   ❑ NA   Comments:

   c. district?
☒ Yes   ❑ No   ❑ NA   Comments:

   d. service delivery points?
   ☒ Yes   ❑ No   ❑ NA   Comments:

If no to 16 a–d, skip to question 19.

SECTION VI: Inventory Control Procedures

17. a. Which products stockout most frequently?
3 FDC (Adults)
Pediatric drugs

    b. How long do the stockouts normally last?
3 months

    c. What causes these stockouts?
Unmonitored TB cases

    d. At which levels or what parts of the country do most stockouts occur?
Districts and SDPs.

18. How did the stockouts affect program services and performance (specify which products and levels)?
Patients switched to other regimens
Additional costs in redistributing the available commodities

19. Are there established procedures for placing emergency orders?
    ☒ Yes ❑ No   Comments:
In cases of stock imbalances, program can switch the mode of transportation i.e. instead of shipping, can decide to airlift.

If *No, skip to question*

20. If yes, what is the emergency order point (EOP) for each level?

    a. central? **None**

    b. regional? **None**

    c. district? **None**

    d. service delivery points? **None**

SECTION VI: Inventory Control Procedures

21. a. In the past one year, how often have emergency orders been placed by the following levels (include product):

      i. central? **None**

      ii. regional? **None**

      iii. district? **Not tracked**

      iv. service delivery points? **Not tracked**

  b. How successfully are emergency orders filled for the following levels (as a percentage)?

      i. central? **N/A**

      ii. regional? **N/A**

      iii. district? **N/A**

      iv. service delivery points? **N/A**

21. Other comments on inventory control:

STRENGTHS	WEAKNESSES
Guidelines exist for stocking commodities as per the max – min inventory control system Central and regional level mostly use FEFO System of reallocating supplies is in place	Max – Min not clearly defined and is not implemented as per the guidelines There are no Standard Operating Procedures for inventory management No established system parameters for inventory control system (e.g.- emergency order point). There is no guidance for tracking losses and adjustments Consumption data is not used for decision making No written guidelines for conducting redistributions. Push and pull are implemented together

RECOMMENDATIONS

SECTION VI: Inventory Control Procedures

Update tools and guidelines and disseminate to all levels on issues related to inventory control including means of conducting redistributions

Enforce implementation of inventory control procedures as per the set parameters through improved and strengthened supervision and trainings.

Develop reporting tools to include losses and adjustments and consumption

Conduct trainings on issues related to inventory management

Design a system to improve the management of TB commodities.

SECTION VII: Warehousing and Storage

1. Does the program have written guidelines for storage and handling of all products, at all levels of the system (e.g., manuals, posters, etc.)?
        ☒ Yes   ❑ No   Comments:

2. Are there written guidelines for disposal of sharps, biohazardous material, and other medical waste?
    ❑ Yes ❑ No   Comments: Yes written guidelines available

3. Does the program conduct at least one physical inventory of all products annually at storage facilities at the following levels:
a. central?
        ❑ Yes   ❑ No   Comments: Yes
b. regional?
        ❑ Yes   ❑ No   Comments: Yes
c. district?
        ❑ Yes   ❑ No   Comments: Yes
d. service delivery point?
        ❑ Yes   ❑ No   Comments: Yes

Are there cold chain requirements for TBL supply chain?
    ❑ Yes   ❑ No   ❑ NA Comments: No

If no, skip to question 7.

Are cold chain storage resources (e.g., refrigerator, paraffin/kerosene, and temperature chart) available at all levels of the system, where appropriate?
    ❑ Yes   ❑ No   ❑ NA Comments: N/A

How is the cold chain monitored to ensure that products are consistently maintained at appropriate temperatures? (Check all that apply.)
    ❑ written guidelines   ❑ supervision
    ❑ temperature log sheets   ❑ other_____N/A

7. Is the existing storage capacity adequate to handle the current quantities of products at the following levels:
    a. central?
        ❑ Yes   ❑ No   ❑ NA   Comments: Yes

    b. regional?
        ❑ Yes   ❑ No   ❑ NA   Comments: Yes

    c. district?
        ❑ Yes   ❑ No   ❑ NA   Comments: No, majority have less capacity to store supplies

    d. service delivery point?
        ❑ Yes   ❑ No   ❑ NA   Comments: Yes, to the number of patients

SECTION VII: Warehousing and Storage

8. Can the existing storage capacity handle all the quantities needed to ensure that no stockouts occur at the following levels?

     a. central?
        ☒ Yes   ❑ No   ❑ NA   Comments: Yes

     b. regional?
        ☒ Yes   ❑ No   ❑ NA   Comments: Yes

     c. district?
        ❑ Yes ☒ No   ❑ NA   Comments: No, many of the district hospital have storage
facility for TBL products

     d. service delivery point?
        ☒ Yes   ❑ No   ❑ NA   Comments: Yes

If yes to all, skip to question 10.

9. How does the program cope with inadequate storage space at the following levels:
    a. central? N/A

    b. regional? N/A

    c. district? They order small amount to fit in the space or keep products to a neighborhood facility with adequate space

    d. service delivery point?   N/A

10. Does the program have plans for meeting storage requirements for at least the next five years?
       ❑ Yes ❑ No   Comments: The responsibility to ensure storage requirements are attained falls within the jurisdiction of the respective councils

11. Describe the program's plans for accommodating growth (e.g., infrastructure, distribution, etc.).
  Skipped

12. Specify storage conditions that need improvement, if any (e.g., cleanliness, organization, temperature, building structure, etc.).
1. Increase of space for storage of TBL products
2. Improve ventilation and air-condition system for attaining adequate temperature
3. Improve cleanness
4. Improve arrangements of stackers and products
5. Improve security
6. Fire equipment

13. a Is there a procedure for recording complaints about product quality at all levels?

   ❑ Yes ❑ No   Comments: Was introduced but not implemented

   b. If yes, how are they handled?

SECTION VII: Warehousing and Storage

14. Are visual quality assurance inspections of products conducted at the storage facility at the following levels:

15. Are there written procedures or guidelines for destroying damaged and expired products?
❑ Yes   ❑ No   Comments: Yes

If no, skip to question 18.

16. Describe the written procedures/guidelines for destroying damaged and expired products.

Follows the stages as follows;

1. Report to a pharmacist in charge

2. Compile a complete Report containing the name and quantity of the expiries; even to ascertain the value of loss

     3. Pharmacist reports the higher authority to solicit a consent or authorization for destroying the products (e.g. DMO, Council departments, TFDA, Internal auditors, e.t.c)

4. The respective facility arrange logistics for destroying the products

17. In practice, are damaged and expired products destroyed according to the program's disposal guidelines at the following levels:

    a. central?
      ☒ Yes   ❑ No   ❑ NA   Comments: Yes

    b. regional?
      ☒ Yes   ❑ No   ❑ NA   Comments: Yes

    c. district?
      ☒ Yes   ❑ No   ❑ NA   Comments: Yes

    d. service delivery point?
  ❑ Yes   ❑ No   ☒ NA   Comments: N/A (They are not mandated to dispose products as per the guideline)

18. Describe notable problems encountered in the past year, if any, regarding wastage due to damage or expirations. Please note product, level, location, approximate amount of goods, and actions taken.

Guideline is entertaining a long bureaucratic procedure to dispose the drugs which has financial and human resources implications

Health personnel are not aware of the guideline to dispose off

 Pile up of expired products in different levels as destruction of expiries has never been done for the past 6 years

19. Other comments on warehousing and storage:

Build capacity in proper storage management to respective personnels

STRENGTHS	WEAKNESSES

SECTION VII: Warehousing and Storage

Existing of national and zonal MSD warehouses and storage facilities at service delivery points	TB health personnel lack knowledge on good storage practices from Regional to lower levels
SDP have adequate space per the quantities required for the clients	QA on TBL products isn't structured/well implemented from district to lower facilities
Established Storage & disposal Guidelines	Guideline is entertaining a long bureaucratic procedure to dispose the drugs which has financial and human resources implications

RECOMMENDATIONS

Capacity building for warehouse and storage human resources and supervisors

Review the guideline for drug's disposal to be user-friendly at all levels

Enforce QA through supervision activities at all levels

SECTION VIII: Transport and Distribution

1. How are products delivered between each level of the system (include frequency and means of transportation)? Specify between which levels. How are routes determined?
- Central: From MSD Central to Zonal Warehouse by MSD Vehicles
        - MSD Zonal to Region: With exception of Dar es Salaam, MSD vehicle delivers to regional warehouses. Routes are arranged on quarterly basis
        - Region to District; supplies are being collected by the DMO's vehicles
 - District – Health Facilities; DTLC delivers goods to health facilities with rare exceptions of few facilities that have means of transport. Deliveries are based on the calls/requisitions from the health facilities or during the supervision visit

2. Do written procedures specify what type of distribution system should be used to distribute products between each level?
 ❑ Yes ❑ No   Comments: Yes but it is not clear and well implemented at lower level (DTLC-SDPs)

3. Is there a documented distribution schedule for all levels?
 ❑ Yes ❑ No   Comments: Yes

4. Which essential health products are distributed together with TBL commodities (e.g., contraceptives, essential drugs, STI and HIV test kits and drugs, laboratory supplies, etc.)? Specify by level.
From MSD Central to Zonal, Regional and District Levels they're distributed by other essential health products, but from district to health facilities is done separately from other drugs

5. Are a sufficient number of functioning vehicles available, with petrol and drivers, at appropriate levels, to meet the desired product distribution schedule?

    a. central?
 ❑ Yes   ❑ No   ❑ NA   Comments: Yes

     b. regional?
 ❑ Yes ❑ No   ❑ NA   Comments: Yes

c. district?
        ❑ Yes ❑ No   ❑ NA   Comments: Yes, available but not sufficient to meet desired product distribution schedule

d. service delivery point?
        ❑ Yes ❑ No   ❑ NA   Comments: NA

SECTION VIII: Transport and Distribution

6. Are vehicles (e.g. cars, motorcyles) regularly available for supervision?

a. central?
❑ Yes ❑ No   Comments: Yes

b. regional?
❑ Yes ❑ No   Comments: Yes

c. district?
❑ Yes ❑ No   Comments: Yes

7. Are vehicles available for biohazardous material and sharps waste transport?
     ❑ Yes   ❑ No   Comments: N/A

8. Are vehicles used effectively for routine and emergency deliveries at all levels? Explain (e.g., maximum use of vehicle capacity, coordination of distribution routes, etc.).
Yes from Region-District to lower level facilities

No from Central to Zonal Level

9. a. Are all vehicles in running order?

Yes majority

    b. How is vehicle maintenance handled at the different levels?

Yes to some is done by the Program

10. Where are the vehicles kept (at what levels of the system)?

Yes at designated levels

SECTION VIII: Transport and Distribution

11. In general, are orders delivered as scheduled at the following levels:

   a. central?
   ☒ Yes   ❏ No   Comments: Zonal Warehouse to Regional - Yes

   b. regional?
   ❏ Yes   ☒ No   Comments: No

   c. district?
   ❏ Yes   ☒ No   Comments: No

   d. service delivery point?
   ❏ Yes   ☒ No   Comments: No

12. a. Is transportation outsourced at any level of the system?
         ❏ Yes ❏ No **N/A**
   If yes, how effective has it been?

13. Does the program's budget have a line item for:

   a. vehicles (cars, motorcycles etc.)?
   ❏ Yes ❏ No ❏ NA   Comments: Yes

   b. fuel?
   ❏ Yes ❏ No ❏ NA   Comments: Yes, not sufficient

   c. spare vehicle parts?
   ❏ Yes ❏ No ❏ NA   Comments: Yes, not sufficient

   d. vehicle maintenance and repair?
   ❏ Yes ❏ No ❏ NA   Comments: Yes, not sufficient

   e. per diem?
   ❏ Yes ❏ No ❏ NA   Comments: Yes, not sufficient

   f. salaries for drivers?
   ❏ Yes ❏ No ❏ NA   Comments: Yes, not sufficient

14. a. Are any of the above items supported by external funds?
   ❏ Yes ❏ No **Yes**

   b. If yes, how much? By whom?

By GLRA
- 63,000/= fuel and motorcycle maintenance per quarter
- 35,000/= supervision per two days per quarter

   c. If yes, are there plans to phase out or end this support?
YES

15. Other comments on transport and distribution:

Due to the geographical location of facilities, a motorcycle is not sufficient to distribute the goods to remote facilities, especially when someone has to cycle for 300 kms and in particular a female personnel

Funds for supervision is not sufficient from Regional to District and District to Health Facilities despite donor support

STRENGTHS	WEAKNESSES
Availability of Distribution vehicles and schedule Donor support in distribution activity	Delays of orders to all levels Distribution Schedule is not well implemented/adhered to all levels Practically, a PUSH DISTRIBUTION system is implemented from district to health facilities

RECOMMENDATIONS

Assign more funds for supervision vehicle and exercise (e.g. from the council)

Integrate budget for supervision and distribution vehicles into CCHP

NTLP should solicit funds to address problems with limited funding for transportation

Based on geographical locations of some health facilities, use of motorcycles is impractical and therefore use of 4x4 vehicles is recommended,

SECTION IX: Organizational Support for Logistics System

1. How often do personnel at the following levels communicate?

a. Central-level logistics staff with staff from the next level below (e.g., region, province, district)
❑ Never ❑ Weekly ❑ Monthly ☒ Quarterly ❑ Annually   Comments: Also have annual meetings

b. Regional-level logistics staff with staff from the next level below (e.g. district)
❑ Never ❑ Weekly ❑ Monthly ☒ Quarterly ❑ Annually   Comments:

c. District-level logistics staff with the service delivery point
❑ Never ❑ Weekly ❑ Monthly ☒ Quarterly ❑ Annually   Comments: for diagnostics centres

If never to question 1 a–c, skip to question 3.

Describe what is done during meetings with staff with logistics responsibilities.
Central; transport and redistribution

Is there a supervision system that covers logistics activities?
☒ Yes ❑ No   Comments: INCLUDED IN THE CHECK LIST

4. How often is supervision conducted at the service delivery points?
❑ Never ❑ Weekly ☒ Monthly ❑ Quarterly ❑ Annually   Comments: monthly for diagnostic centres and quarterly for dispensaries

5. Is there a process in place for improving any gaps in the knowledge and skills of logistics personnel at the following levels? *If yes, please describe process.*
   a. central?
   ❑ Yes ☒ No   Comments: international workhshop sometimes we have been invited in SA once

   b. regional?
   ☒Yes ❑ No   Comments: meetings, trainings(international-Arusha) etc

   c. district?
   ☒Yes ❑ No Comments: DTLCs trainings and refreshers

d. service delivery point?

SECTION IX: Organizational Support for Logistics System

☒Yes ❏ No   Comments: TB/HIV trainings, 3I's training

6.   Are there written procedures and guidelines (e.g., manuals, job aids, standards) to help staff carry out their logistics responsibilities?

☒Yes ❏ No   Comments: NTLP Manual, 2006 but not available;

If no, skip to question 8.

7.   List all procedures/guidelines that cover logistics responsibilities.
NTLP Manual
Drug management manual

8.   Are the procedures and guidelines distributed to staff at the following levels:
   a. central?
   ☒ Yes ❏ No Comments:

   b. regional?
☒Yes ❏ No   Comments:

   c. district?
   ☒   Yes ❏ No   Comments:

   d. service delivery point?
   ☒ Yes ❏ No   Comments: they are distributed but not available.

9.   Do staff who manage commodities have a written job description that includes logistics responsibilities at the following levels:
   a. central?
   ❏ Yes ☒ No   Comments:

   b. regional?
      ☒ Yes ❏ No   Comments: NTLP mannual, but the sytem need to be strengthened.

   c. district?
   ☒ Yes ❏ No   Comments: NTLP manual, but the sytem need to be strengthened

   d. service delivery point?
   ❏ Yes ❏ No   Comments: NTLP mannual, but the sytem need to be strengthened

SECTION IX: Organizational Support for Logistics System

10. Do logistics staff have the tools and resources they need to do their jobs, at the following levels (e.g., job aids, forms, carbon paper, calculators, shelving, vehicles, funds for transport, etc.)? If not, which tools or resources are missing at the following levels:

    a. central?
    ☒ Yes ❑ No   Comments:

    b. regional?
    ☒ Yes ❑ No   Comments: but missing enough shelving, and limited budget for transport

    c. district?
    ☒ Yes ❑ No   Comments: but missing enough shelving, and limited budget for transport

    d. service delivery point?
    ❑ Yes ☒No   Comments: transport, job aids

11. a. Is external assistance (from other NGOs, donors, or partners) used to complete management and supervision activities?
    ☒Yes ❑ No   Comments:

    b. If yes, describe the extent of the external assistance.
ICAP (PERPFAR partners)-cars, fuel, maintenance, motor bikes,
GLRA – cars, fuel, maintenance, motor bikes
PATH - cars, fuel, maintenance, motor bikes

12. Describe supervisory structure by job position/title and by level. Indicate if any position receives supervision from more than one person or unit. Provide a chart if possible.

ntlp→ rtlc → dtlc → sdp →→

partners supervision

13 . Are supervisory responsibilities described in written job descriptions?
    ☒Yes ❑ No   Comments:

14. Are guidelines available for how the supervisor is to conduct the supervisory visit (e.g., introductions, positive style of interaction, follow-up)?
    ☒ Yes ❑ No   Comments:

Are tools available that describe what to cover when conducting a supervisory visit (e.g., guidelines, a checklist)?
    ☒ Yes ❑ No   Comments/describe: supervision checklist

If no to 13–15, skip to question 18.

SECTION IX: Organizational Support for Logistics System

Do the supervisors use these guidelines and tools?

Some of them use some of the not, not frequently

17. Are supervisory visits conducted for staff at the following levels:

   a. central?
   ☒ Yes ❏ No   Comments:by GDF

   b. regional?
   ☒ Yes ❏ No   Comments: by NTLP, not routine supervision. Only specified supervision is
done.

   c. district?
   ☒ Yes ❏ No   Comments: once quarterly.

   d. service delivery point?
   ☒ Yes ❏ No Comments:

If no to 17 a–d, skip to question 21.

18. What types of activities take place during the visits:

a. review procedures for forecasting needs?
      ☒ Yes   ❏ No   Comments: only at the central

b. review procedures for ordering products?
      ☒ Yes   ❏ No   Comments:

c. observe product storage?
      ☒ Yes   ❏ No   Comments:

d. conduct physical inventory?
      ☒Yes   ❏ No   Comments:

e. review logistics records and reports?
x Yes ❏ No   Comments: at the national levels yes,

f. discuss budgeting for logistics activities?
x Yes ❏ No   Comments: only central

g. review changes made since last supervisory visit?
      ☒ Yes   ❏ No   Comments:

h. on-the-job training to improve job performance?
      ☒ Yes   ❏ No   Comments: not formalized

i. discuss what is working and what is not working?
      ☒Yes   ❏ No   Comments:

j. discuss what help is needed (staff, equipment, forms, etc.)?

SECTION IX: Organizational Support for Logistics System

☒ Yes   ☐ No   Comments:

---

19. Is there a documented schedule for supervision?
     ☒ Yes ☐ No   Comments: not always adhered to.

If no, skip to question 21.

---

20. a. Are supervisory visits conducted according to the established schedule? If not, why not?

No, due to ad hock activities
b. How often do they take place?
Quarterly.

---

21. Are there any constraints to conducting supervisory visits?
     ☒Yes ☐ No   Comments:
Ad hock activities
Budgetary issues

---

22. If a staff member's performance in logistics is not satisfactory, is the person provided with:
     a. in-service training?
          ☐ Yes   ☒ No   Comments:
     b. on-the-job training?
          ☒ Yes   ☐ No   Comments:

     c. written instructions on how to improve?
          ☐ Yes   ☒ No   Comments:

     d. a coach or mentor?
          ☒ Yes   ☐ No   Comments:

     e. other? (describe)

---

23. Does the program conduct periodic staff development activities (e.g., classroom training, coaching, on-the-job training, etc.)?
     ☒Yes ☐ No   Comments:

SECTION IX: Organizational Support for Logistics System

24. Has training been given to current staff at all appropriate levels, in the following areas:
   a. completion and submission of LMIS reports?
   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   b. proper storage of health products?
   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   c. maintaining proper stock levels?
   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   d. determining order quantities?
   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   e. determining issue quantities?
   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   f. estimating annual needs?
   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   g. reviewing reports and records? only dtlc training has these elements, they do it once in life times

   ❑ Yes ☒ No   Comments: only dtlc training has these elements, they do it once in life times

   h. other? (list):
   ❑ Yes ❑ No   Comments:

25. Other comments on organizational support for the logistics system:
Introduction of SMS for life in the TB program, since everyone is using the phone.

STRENGTHS	WEAKNESSES
There is reliable transport for supervision Checklist for supervision Update of the NTLP manual is in progress	Inadequate routine supervision at all levels No curriculum for training on logistics issues Budgetary constraints for supervision at districts level Tools (e.g- job aids, manuals) are not readily available for use by staff at all

RECOMMENDATIONS

Develop curriculum and relevant job aids for training on logistics including LMIS, inventory control etc.

The work of DTLCs is incorporated in the CCHP (all activities which are donor funded)

Develop Job aids and Standard Operating Procedures (SOPs) on LMIS

Regular and routine supervision from central level

SMS for life be adopted in the management of TBL commodities

SECTION X: Product Use

1. Do written standard treatment guidelines exist for TB and leprosy?

    ✠ Yes ❑ No   Comments:

If no, skip to question 4.

---

2.   List the TB and leprosy commodities that are required to comply with the standard treatment guidelines.

List of ten commodities

---

3.   Are standard treatment guidelines distributed to all the service delivery points?
            ✠ Yes ❑ No   Comments: However, not to all facilities

---

4. What are the guidelines on using DOTS at health facilities at the

Regional Health Facility Level: Comments
Mwongozo wa matibabu ya kifua kikuu (NTLP Manual) and PCT Manual

District Health Facility Level: Comments

Same as above

Health Centres and Dispensaries: Comments

---

5.   Are there written procedures for monitoring and supervising prescribing practices (e.g., monitoring number of products/drugs prescribed/dispensed per prescription)?
            ✠   Yes ❑ No   Comments: patients cards 01, 02 and Lep registers

---

If no, skip to question 7.

---

6.   Are the written procedures distributed to service providers at all levels?
            ✠ Yes ❑ No   Comments: but not evenly.

7.   Do written universal safety precaution guidelines exist (e.g., disposing of used needles, washing hands before and after contact with patient)?
            ✠   Yes ❑ No   Comments: not distributed to every facility.

If no, skip to question 9.

---

8.   Are precaution guidelines distributed to service providers at all levels?
            ❑ Yes ✠   No   Comments:

SECTION X: Product Use

9.   a. What mechanisms and resources are in place to ensure the implementation of standard treatment guidelines and universal safety precautions? No formal mechanism

    b. To what extent are they followed?

    c. If not followed, what are the barriers to putting them into practice?

10.   Are commodities provided only to facilities that have staff trained and are equipped to use them (e.g., TB drugs only to DOT-trained facilities)?
    ❑ Yes ☒ No   Comments:

11.   a. Are prescribing practices monitored and compared to standard treatment guidelines?

    ☒ Yes ❑ No   Comments: but not to the required extent/ i.e not frequently as needed

    b. If so, how often? Quarterly according to the NTLP manual

    c. By whom? DTLC and /or TB/HIV officer

12.   a. Are there behavior change communication campaigns underway (or undertaken in the previous 2–3 years) that promote product use for prevention and/or treatment? (e.g. use of bed nets for malaria prevention, use of modern contraceptive methods, or voluntary counseling and testing (VCT)?

    ☒   Yes ❑ No   Comments:

    b. If yes, describe campaigns and specify who is responsible for these activities.
PITC and DCT
Provider initiated Testing and Counseling and diagnostics counseling and testing

13. Do the following barriers limit client access to TB and leprosy services?
    a. programmatic (e.g- HR, funding, policy, donor relations)?
        ❑ Yes ☒ No   Comments:

    b. operational (e.g- availability of drugs, transportation etc.) ?
        ☒Yes   ❑ No Comments: sometimes we fail to deliver drugs to the facilities

    c.   cultural?
        ❑ Yes X No   Comments:

    d.   religious?
        ❑ Yes ☒ No   Comments:

    e.   price?
        ❑ Yes ☒ No   Comments:

    f.   other? (specify)

SECTION X: Product Use

❑ Yes ☒ No   Comments:

14. Is access to the programs' services negatively affected by perceptions of quality at the following provider sites?

a. public?
❑ Yes   ☒No   Comments:

b. NGO?
❑ Yes ☒ No   Comments:

c. social marketing?
❑ Yes   ☒ No   Comments:

d. private/commercial?
❑ Yes   ☒   No   Comments:

e. other? (specify)
❑ Yes   ☒   No   Comments:

15. What are the problems most commonly expressed regarding perceived quality?
No

16. Other comments on product use:

STRENGTHS	WEAKNESSES
Drugs are MOSTLY available to patients Initiation of patients centered treatment has improved DOTs use/implementation Introduction of FDC's has increased compliance and adherence.	Presence of expired medicines at facilities, e.g pediatric formulations. Lack of operational procedures leading to un availability of drugs for some facilities Lack of funds to support DTLC/RTLC for transport issues especially for supervision Over ordering of certain drugs (RHZ, RH, MB-peds). No mechanism which ensures the implementation of standard treatment guidelines and universal safety precautions Pharmaceutical personnel to be involved in the process of TB/L drugs. ordering, reporting, dispensing e.t.c

RECOMMENDATIONS

Pharmaceutical personnel should be involved in the program in terms of ordering, reporting, and dispensing of TBL drugs

In places where TBL services are not provided, nearby facilities should initiate DOT centers (i.e. DOTS expansion)

SECTION XI: Finance/Donor Coordination/CS Planning

1. Describe the funding level for each supply chain component:
   a. products?
   ❑ Does not exist ❑ Not adequate ☒ Adequate ❑ More than adequate   Comments:

   b. warehousing/storage?
   ❑ Does not exist ☒ Not adequate ❑ Adequate ❑ More than adequate   Comments:

   c. logistics management information system?
   ❑ Does not exist ☒ Not adequate ❑ Adequate ❑ More than adequate   Comments:

   d. transportation?
   ❑ Does not exist ❑ Not adequate ☒ Adequate ❑ More than adequate   Comments: Transport
   is under MSD there have been challenges whenever urgent demands arise, the responses have not
   been timely to meet the urgency

   e. logistics staff development?
   ❑ Does not exist ☒ Not adequate ❑ Adequate ❑ More than adequate   Comments:

   f. salaries for logistics staff?
   ❑ Does not exist ☒ Not adequate ❑ Adequate ❑ More than adequate   Comments: more
   staff need to be recruited

   g. waste management?
   ☒ Does not exist ❑ Not adequate ❑ Adequate ❑ More than adequate   Comments: This is
   overseen by MOHSW as a whole and not is program specific

   h. supervision?

   ❑ Does not exist ☒ Not adequate ❑ Adequate ❑ More than adequate Comments: NTLP
   program has not been able to reach its target

2. What is the program's annual budget and expenditure from all sources for:

Drug budget? _____   Reported year <u>2010</u>   Annual expenditure: USD
<u>2,557,810</u>

Logistic budget?_____   Reported year _____

Annual expenditure _____

Please see the attached Appendix 1

a. Who finances the program's annual budget?
Partners (Germany Leprosy and TB Relief Association (DAHW/GLRA), The Global fund to fight
AIDS/HIV, Tuberculosis and Malaria (GFATM), The Centre for Disease Control and prevention
(CDC/PEPFAR), USAID through the Programme for Appropriate Technology in Health (PATH),
UNITAD, The Netherlands Tuberculosis Foundation (KNCV), USAID through TBCAP, Funds for
Innovative New Diagnostics (FIND), World Health Organization (WHO), Novartis Foundation for
Sustainable Development (NFSSD), Global Drug Facility (GDF) under the Stop TB Partnership. World
Bank – IDA and GOT + Donations

SECTION XI: Finance/Donor Coordination/CS Planning

b. What percentage of the cost of products procured is government financed? 20%

4. What process is used to develop the program's budget?

Meetings, workshops, involving partners/stakeholders,

Use of ministerial budgeting guidelines

Annual Plan derived from Strategic plan

5. Estimate the percentage of products bought from domestic versus international suppliers.

Only prednisolone for leprosy patients   = 0.1% Prednisolone bought from the local market complements what is bought from outside

6. Is there a cost recovery system for:

a. services at a public health facility?

❑ Yes   ☒ No   Comments:

b. commodities provided at a public health facility?

❑ Yes   ☒ No   Comments:

c. services at a private health facility?

❑ Yes   ☒ No   Comments: in the course of establishing diagnosis, these facilities do charge. But after diagnosis, all services are free

d. commodities provided at a private health facility?

❑ Yes   ☒ No   Comments:

7. Is there a commodity financing gap currently, or in the short-term (next 1 to 3 years)?

☒ Yes   ❑ No   Comments: Currently funds are being mobilized from partners, with some promising hopes. In the current budget the government have not submitted its share (20%) to be used for clearing, storage and distribution of the commodities

If yes, quantify amount annually.

Is there a commodity financing gap in the medium term (next 3 to 5 years)? Budget funds are received on an annual basis

☒Yes   ❑ No   Comments: processes for mobilizing funds are under way

If yes, quantify amount annually.20% from the government

9. What percentage of the TB and leprosy commodities are financed from?

 a. GOT? 20% for clearing, storage and distribution of the commodities

b. Donors/partners? 80% procurement and transportation to the port for drugs and supplies

SECTION XI: Finance/Donor Coordination/CS Planning

10. Has the country set up a basket program for health?
    ☒ Yes ❏ No   Comments:

11. Are TB and leprosy commodities explicitly included in the basket funds?
    ☒ Yes ❏ No   Comments: 20% being contributed by GOT comes from the basket fund

12. How efficiently do the basket funds cover the entire client base (income, geographical locations etc.) for TB and leprosy commodities? Covers nationally

13. Is there a committee or task force for TB and leprosy commodity security?

    ❏ Yes ☒ No   Comments:

14. Are there other coordination mechanisms in place? If yes, give examples.
    ☒ Yes ❏ No   Comments: inter Agency + TB/HIV coordination committees – up to district level RTLC & DTLC involved

15. Does the committee involve all the relevant stakeholders (donors, MOH, NGOs, etc.)?
    ☒ Yes ❏ No   Comments:(In this case it is the coordinating mechanism) only few local NGOs are involved. Most of them are international

16. Does the committee hold meetings at specified intervals (e.g., quarterly, annually)?
    ☒ Yes ❏ No Comments: annual/biannual at national level, quarterly for the regional and district level

17. Describe decisions made and actions taken by the committee.
Apply for funding opportunities
Managerial decisions e.g. recruitment of staff

18. Is there a local TB and leprosy commodity security champion with decision-making authority?
    ☒ Yes ❏ No Comments: Permanent Secretary when informed by the Program Manager through director of preventive services

19. Has the Ministry, with other stakeholders, developed a national TB and leprosy strategic plan for TB and leprosy commodity security?
☒ Yes ❏ No Comments: Commodities are just part of the plan which encompasses a number of various aspects

If no, skip to 25.

20. Describe the strategic plan.
2009/2010 – 2015/2016

21. Is the national TBL strategic plan for commodity security fully financed/resourced?
    ❏ Yes ☒ No Comments: For Most of the items, funds are still being mobilized

SECTION XI: Finance/Donor Coordination/CS Planning

22. Is the national TB strategic plan being implemented?

☒ Yes ❑ No   Comments:(only 10% - 50%) this being due to structure of NTLP and government procedures- This concern was raised by one of the stakeholders.

b. How (e.g., nationally, regionally, locally)? At all levels

23. Does the plan include/commit government funds to purchase TB and leprosy commodities?

☒ Yes ❑ No   Comments: 20% of the budget and exemption of taxes

24. What are the program's future plans for local financing? Do donors have plans to phase out or reduce donations during the next five years?

Include in the MTEF (mid-term expenditure framework).
GDF last term is ending Nov 2012. Planning to ask for special consideration of the third term-There is a promising light on this due to NTLP's performance.

 Some donors are reducing their contribution, some are changing priorities.

25. Other comments on finance/donor coordination/CS planning:
Donors have more emphasis on the project approach than program approach; this in turn leads to different reporting requirements. There should be a swap approach .i.e. more emphasis on the program approach.

STRENGTHS	WEAKNESSES
High quality drugs in the country from WHO pre-qualified manufactures	GOT highly depending on donor support i.e. 80%
Number of Partners willing to support in commodities e.g (FIND, PATH – PEPFAR)	Absence of electronic system for reporting/ real time report
Nucleus HR on logistics	Rapid response to country level shortages is not satisfactory
We use MSD- a well-established procurement and distribution system. Not a standalone business	Post-marketing surveillance for TBL medicine is not frequently done
Existence of a manual LIMS	Monopoly – only one source of drugs in the country
	No mechanism on knowing drugs which are due to expire prior expiration from the facilitie
	Several Stock outs/constraints of some products
	Lack of stakeholders meetings
	GOV bureaucracy especially during clearing TB commodities, this decreases the shelf life of products due to the time spent at the port
	Financial gap on Logistics
RECOMMENDATIONS	

SECTION XI: Finance/Donor Coordination/CS Planning

GOV should ensure that more funds are allocated to procure drugs through general system (GOT budget)

MSD should work with MOH to establish real time reporting. E.g. need for redistribution

Strengthen pharmacovigillence at the SDP's

Recruit more HR, well trained on Logistics

Formalized stakeholders meetings to discuss all issues together

Improve storage conditions for SDPs, warehouses and MSD particularly for pediatric formulations

Procured commodities should have at least 3 years shelf life from date of manufacture to minimize expiries.(Reduce the time delays on course of the procurement process)

Note; the bolded bullets were raised by stakeholders only. i.e not NTLP.

The non-bolded bullets were raised by both NTLP and stakeholders

Annex 6: LIAT Tool

Survey Name : TZ_1_FacilityID_FINAL
No of Questions:34
===
1:FACILITY IDENTIFICATION. The questions in this form provide general information about the health facility/warehouse (label)

2:Facility HMIS code (this will be used as the unique identifier for this facility) (text)
Data Field Name : Facility_HMIS_Code

3:Date of Visit (date)
Data Field Name : d__date

4:Name of the facility (text)
Data Field Name : ID__facilityname

5:Enter Facility GPS Code (this is a DIFFERENT code than the HMIS Code) (text)
Data Field Name : Facility_GPS_Code

6:This question asks for GPS Coordinates. Enter GPS Coordinates for degrees East (marked as E on the GPS)? (text)
Data Field Name : GPS_Coordinates_East

7:This question asks for GPS Coordinates. Enter GPS Coordinates for degrees South (marked as S on the GPS)? (text)
Data Field Name : GPS_Coordinates_South

8:Select Zone (multi)
Data Field Name : ID_zone
Possible responses:
- Dar es Salaam → Skip to Q10
- Iringa → Skip to Q10
- Mbeya → Skip to Q11
- Moshi → Skip to Q12
- Mtwara → Skip to Q13
- Mwanza → Skip to Q14
- Tanga → Skip to Q23

9:Select Region (multi)
Data Field Name : ID_region_DSM
Possible responses:
- Dar es Salaam → Skip to Q15
- Morogoro → Skip to Q16

- Pwani

10:Select Region (multi)
Data Field Name : ID_region_Iringa
Possible responses:
- Iringa → Skip to Q17
- Ruvuma

11:Select Region (multi)
Data Field Name : ID_region_Mbeya
Possible responses:
- Mbeya → Skip to Q18
- Rukwa

12:Select Region (multi)
Data Field Name : ID_region_Moshi
Possible responses:
- Arusha → Skip to Q19
- Manyara
- Moshi

13:Select Region (multi)
Data Field Name : ID_region_Mtwara
Possible responses:
- Lindi → Skip to Q20
- Mtwara → Skip to Q21

14:Select Region (multi)
Data Field Name : ID_region_Mwanza
Possible responses:
- Kagera
- Mara
- Mwanza → Skip to Q22
- Shinyanga

15:Select District (multi)
Data Field Name : ID_district_DSM
Possible responses:
- Ilala
- Kinondoni
- Temeke

16:Select District (multi)
Data Field Name : ID_district_Morogoro
Possible responses:
- Kilombero

- Morogoro Rural
- Morogoro Urban
- Mvomero

17:Select District (multi)
Data Field Name : ID_district_Iringa
Possible responses:
- Iringa Urban
- Kilolo
- Ludewa
- Njombe

18:Select District (multi)
Data Field Name : ID_district__Mbeya
Possible responses:
- Ileje
- Mbarali
- Mbeya Rural
- Mbeya Urban
- Rungwe

19:Select District (multi)
Data Field Name : ID_district_Arusha
Possible responses:
- Arumeru
- Arusha
- Karatu
- Monduli

20:Select District (multi)
Data Field Name : ID_district_Lindi
Possible responses:
- Kilwa
- Lindi Rural
- Lindi Urban
- Ruangwa

21:Select District (multi)
Data Field Name : ID_district_Mtwara
Possible responses:
- Masasi
- Mtwara Rural
- Newala
- Tandahimba

22:Select District (multi)

Data Field Name : ID_district_Mwanza
Possible responses:
- Geita
- Magu
- Misungwi
- Sengerema

23:Select District (multi)
Data Field Name : ID_district_Tanga
Possible responses:
- Kilindi
- Korogwe
- Lushoto
- Tanga

24:City/town (text)
Data Field Name : ID__city

25:Facility Type (multi)
Data Field Name : ID__type
Possible responses:
- Warehouse
- SDP

26:If SDP, select type of SDP (multi)
Data Field Name : ID_SDPtype
Possible responses:
- District hospital
- Regional hospital
- Health centre
- Dispensary
- Hospital
- Other

27:If other, specify SDP type (text)
Data Field Name : ID_SDPtypeother

28:Who is the operating authority? (multi)
Data Field Name : ID_opauth
Possible responses:
- Government
- FBO/NGO/VA
- Private
- Other

29:If other, specify operating authority (text)

Data Field Name : ID_opauthother

30:Is the road to the facility paved? (multi)
Data Field Name : ID_paved
Possible responses:
- Yes
- No

31:Is electricity available in the facility on the day of visit? (multi)
Data Field Name : ID__electricity
Possible responses:
- Yes
- No

32:Is running water available in the building on the day of the visit? (multi)
Data Field Name : ID__water
Possible responses:
- Yes
- No

33:Is there a telephone (land line or mobile) or radio in the facility on the day of visit? (multi)
Data Field Name : ID__phone
Possible responses:
- Yes
- No
- Don`t Know

34:You have now completed this portion of the interview. Thank the person you are interviewing, and ask to speak to the person responsible for managing TB and Leprosy commodities in that facility. (label)

Survey Name : TZ_2_Interview_vFinal
No of Questions:68
===

1:FACILITY QUESTIONNAIRE.The questions in this form will be completed through interviews with the health facility personnel responsible for managing TB and Leprosy commodities. (label)

2:Facility HMIS Code (this will be used as the unique identifier for this facility) (text)
Data Field Name : INT__FacilityCode

3:Select facility type (multi)
Data Field Name : INT_ftype
Possible responses:
- District hospital
- Regional hospital
- Health centre
- Dispensary
- FBO/ Private Hospital
- Other

4:Specify "other" for facility type. (text)
Data Field Name : INT_ftype_oth

5:Read objectives of the survey and record personnel name on supplemental form following any questions. Be sure to also record a phone number. (label)

6:What is your name? (text)
Data Field Name : INT_Name

7:What is your title? (text)
Data Field Name : ID_Title

8:What is your mobile phone number, if you have one? (If no phone, answer "No mobile phone") (text)
Data Field Name : INT_mobile

9:How long have you worked at this facility? (Enter total value in months. 1 year=12mo, 2yrs=24mo, 3yrs=36mo) (number)
Data Field Name : INT__timework

10:Who is the principal person responsible for managing TB and leprosy commodities at this facility? (multi)
Data Field Name : INT__primaryperson
Possible responses:
- Nurse
- Medical Doctor

- Pharmacy Technician
- Pharmacy Assistant
- Pharmacist
- Store Officer
- Medical Attendant
- Assistant Medical Officer
- Laboratory Scientist
- Laboratory Technician
- Laboratory Assistant
- Other

11:Specify "other" for Principal person (text)
Data Field Name : INT__primaryperson_oth

12:Is commodities/stock management the primary role of this person at this facility? (multi)
Data Field Name : INT__PrimaryRole
Possible responses:
- Yes
- No

13:The following questions refer to stock keeping logistics forms used to manage health commodities at this facility. (label)

14:Do you use BIN CARDS to manage TB and Leprosy health commodities at this facility ? (multi)
Data Field Name : INT__stockcards
Possible responses:
- Yes
- No

15:Do you use a STOCK LEDGER to manage TB and Leprosy health commodities in this facility? (multi)
Data Field Name : INT__stockledger
Possible responses:
- Yes
- No

16:Do you use OTHER FORMS to manage TB and Leprosy health commodities in this facility (multi)
Data Field Name : INT__otherforms
Possible responses:
- Yes
- No ➔ Skip to Q18

17:Specify "other" for stock keeping forms to manage TB and Leprosy health

commodities. (text)
Data Field Name : INT_otherformsspecify

18:Are any of these stock keeping form(s) available now? (multi)
Data Field Name : INT_formsavailable
Possible responses:
- Yes → Skip to Q20
- No

19:If the stock keeping form(s) are not available, how long have they not been available? (in months) (number)
Data Field Name : INT_timeunavailable

20:The following questions refer to LMIS forms used for reporting and ordering of TB and Leprosy commodities (label)

21:Do you use any type of form to order resupplies or report on TBL commodities? (multi)
Data Field Name : INT_TBLforms
Possible responses:
- Yes
- No → Skip to Q32
- Don`t know

22:Do you use the Requisition and Issue Voucher for ordering of TB and Leprosy commodities? (multi)
Data Field Name : INT__rrf
Possible responses:
- Yes
- No
- NA
- Don`t know

23:Do you use TB DRUG REPORTING AND ORDERING forms for reporting/ordering of TB and Leprosy commodities? (multi)
Data Field Name : INT_drof
Possible responses:
- Yes
- No
- NA
- Don`t know

24:Do you use the DRUG CALCULATION Form for reporting/ordering of TB and Leprosy commodities? (multi)
Data Field Name : INT_dcf
Possible responses:
- Yes

- No
- NA
- Don`t know

25:Do you use any OTHER LMIS FORMS for reporting/ordering of TB and Leprosy commodities? (multi)
Data Field Name : INT_otherLMISform
Possible responses:
- Yes
- No → Skip to Q27
- Don`t know

26:Specify "other" LMIS Form (text)
Data Field Name : INT_LMISform_oth

27:Do the TB reporting/ordering forms include STOCK ON HAND? (must be verified with an LMIS report) (multi)
Data Field Name : INT__form_soh
Possible responses:
- Yes
- No
- Don`t know

28:Do the reporting/ordering/drug calculation forms include QUANTITIES USED? (must be verified with an LMIS report) (multi)
Data Field Name : INT__form__quant
Possible responses:
- Yes
- No
- Don`t know

29:Do the reporting/ordering/drug calculation forms include LOSSES AND ADJUSTMENTS? (must be verified with an LMIS report) (multi)
Data Field Name : INT__form_lossadjust
Possible responses:
- Yes
- No
- Don`t know

30:How often are the ordering forms sent to the higher level? (select all that apply) (multi)
Data Field Name : Ordering_often
Possible responses:
- Monthly → Skip to Q32
- Bimonthly →Skip to Q32
- Quarterly → Skip to Q32
- Semi-Annually → Skip to Q32

- Annually ⟶ Skip to Q32
- Other

31:Specify "other" frequency of ordering forms sent (text)
Data Field Name : INT__lmissenthigher_oth

32:How often are the reporting forms sent to the higher level? (select all that apply) (multi)
Data Field Name : orderingoften
Possible responses:
- Monthly ⟶ Skip to Q34
- Bimonthly ⟶ Skip to Q34
- Quarterly ⟶ Skip to Q34
- Semi-Annually ⟶ Skip to Q34
- Annually ⟶ Skip to Q34
- Other

33:Specify "other" frequency of reporting forms sent (text)
Data Field Name : otherreporting

34:When was the last time you sent a completed ordering form for TB/Leprosy commodities at this facility? (multi)
Data Field Name : INT__lasttime
Possible responses:
- Never
- Within the last month
- 2 months ago
- 3 months ago
- More than 3 months ago

35:When was the last time you sent a completed reporting form for TB/Leprosy commodities at this facility? (multi)
Data Field Name : whenreporting
Possible responses:
- Never
- Within the last month
- 2 months ago
- 3 months ago
- More than 3 months ago

36:Is this a District or Regional Hospital? (multi)
Data Field Name : INT_district_regional
Possible responses:
- Yes
- No ⟶ Skip to Q41

37:Are there any facilities that send TBL ordering forms/reports to this facility? (For

District/regional level Only) (multi)
Data Field Name : INT_lmisfacilitiessending
Possible responses:
- Yes
- No

38:How many facilities are supposed to send TBL reporting/ordering forms to this facility? (For District and Regional level Only) (number)
Data Field Name : INT__lmisnumbersend

39:How many facilities submitted complete reporting/ordering forms within the last reporting cycle? (For District and Regional level Only) (number)
Data Field Name : INT_lmissubmitted_complete

40:ASK TO SEE FORMS...Did you verify the LMIS reports sent to you? (For District and Regional level Only) (multi)
Data Field Name : INT__lmissubmitted_verify
Possible responses:
- Reports verified
- Reports not verified

41:How did you learn to complete the TB and Leprosy reporting/ordering form(s) used at this facility? (check all that apply) (multi)
Data Field Name : INT__formslearn
Possible responses:
- During a logistics workshop ⟶ Skip to Q 43
- During a TBL training ⟶ Skip to Q 43
- On-the-job training ⟶ Skip to Q 43
- Self Learning ⟶ Skip to Q 43
- Never been trained ⟶ Skip to Q 43
- Other

42:Specify "other" for learning how to complete forms. (text)
Data Field Name : INT__formslearn_oth

43:What were you trained on? Check all that apply. (multi)
Data Field Name : INT_trained
Possible responses:
- How to order
- When to order
- How to complete the logistics reporting tool
- How to compile reports
- When to send reports
- How to store commodities

44:How many emergency orders for TB drugs (or TB laboratory commodities) have you

placed in the last 6 months?(If they placed an emergency order, ask to see the emergency order) (multi)
Data Field Name : INT__emergencyorder
Possible responses:
- None
- 1
- 2
- 3
- More than 3
- NA

45:Who determines this facility's resupply quantities of TB and Leprosy commodities? (check all that apply) (multi)
Data Field Name : INT__resupply
Possible responses:
- The facility itself
- Higher-level facility
- Other

46:Specify "other" for determining resupply quantities (text)
Data Field Name : INT__resupply_oth

47:How are the facility's order/resupply quantities of TB and Leprosy commodities determined? (multi)
Data Field Name : INT__resupplydetermined
Possible responses:
- Formula (any calculation – specify calculation)
- Number of TB Cases ⟶ Skip to Q50
- Don't know ⟶ Skip to Q50
- Do not order ⟶ Skip to Q50
- Other ⟶ Skip to Q49

48:Specify the calculation formula for determining resupply quantities (text)
Data Field Name : INT_resupplydetermined_formula

49:Specify "other" for how resupply quantities are determined. (text)
Data Field Name : INT_resupplydetermined_other

50:From where do you order your TB and Leprosy commodities? (multi)
Data Field Name : INT_orderwhere
Possible responses:
- MSD Central ⟶ Skip to Q52
- MSD Zonal ⟶ Skip to Q52
- Region ⟶ Skip to Q52
- District ⟶ Skip to Q52
- Do not order ⟶ Skip to Q52

- Other

51:Specify "other" for where commodities are ordered from. (text)
Data Field Name : INT_orderwhere_oth

52:Who is responsible for transporting TB and leprosy commodities to your facility? (check all that apply.) (multi)
Data Field Name : INT__transport
Possible responses: ⟶ Skip to Q54
- MSD Central delivers ⟶ Skip to Q54
- MSD Zonal delivers ⟶ Skip to Q54
- Region delivers⟶ Skip to Q54
- District delivers ⟶ Skip to Q54
- This facility collects ⟶ Skip to Q54
- Other

53:Specify "other" for transporting commodities. (text)
Data Field Name : INT_transport_oth

54:What type of transportation is most often used? (multi)
Data Field Name : INT__transportmostoften
Possible responses:
- Facility vehicle ⟶Skip to Q56
- Public transportation ⟶ Skip to Q56
- Private vehicle ⟶ Skip to Q56
- Boat ⟶ Skip to Q56
- Motorcycle ⟶ Skip to Q56
- Bicycle⟶ Skip to Q56
- On foot ⟶ Skip to Q56
- Other

55:Specify "other" for transportation most often used (text)
Data Field Name : INT__transportmostoften_other

56:On average, approximately how long does it take between ordering and receiving TB and Leprosy commodities? (multi)
Data Field Name : INT__timebtword
Possible responses:
- Less than 2 weeks
- 2 weeks to 1 month
- Between 1 and 2 months
- More than 2 months

57:Are TB and Leprosy commodities delivered together with other drugs (e.g. FP, essential drugs or HIV) or separately? (multi)
Data Field Name : INT_deliveredtogether

Possible responses:
- TBL and other drugs delivered together
- TBL and other drugs delivered separately

58:Is there a laboratory at this health facility where TB tests are performed? (multi)
Data Field Name : INT_facilitylab
Possible responses:
- Yes ⟶ Skip to Q63
- No

59:If no laboratory is available at this facility, how are patients diagnosed for TB? (multi)
Data Field Name : INT_diagnose
Possible responses:
- Patients are sent to the laboratory at the District Hospital ⟶ Skip to Q61
- Patient's sputum/blood samples are sent to the district hospital ⟶ Skip to Q62
- Other

60:Specify "other" for how patients are diagnosed. (text)
Data Field Name : INT_diagnose_oth

61:If patients are sent to another facility (regional/ district) for diagnosis, where are they initiated on treatment? (multi)
Data Field Name : INT_patientsinitiated
Possible responses:
- At regional/ district facility
- At their own facility

62:If samples are sent to the District Hospital for diagnosis, how long does it take to receive the lab results? (multi)
Data Field Name : INT_timeresults
Possible responses:
- Same Day
- Between 2-5 days
- One week
- More than one week
- More than 2 weeks

63:When did you receive your most recent supervision visit? (Check visitors' book, if necessary, and site copies of the supervisory checklists/ feedback reports.) (multi)
Data Field Name : INT__ssvisit
Possible responses:
- Never received ⟶ Skip to Q66
- Within the last month ⟶ Skip to Q65
- 1 - 3 months ago ⟶ Skip to Q65
- 3 - 6 months ago ⟶ Skip to Q65
- More than 6 months ago ⟶ Skip to Q65

- Other

64:Specify "other" for last supervision visit. (text)
Data Field Name : Supervision_other

65:Did your last supervision visit include drug management (e.g., stock cards checked, reports checked, expired stock removed, storage conditions checked)? (multi)
Data Field Name : INT_drugmanagement
Possible responses:
- Yes
- No
- Don't know

66:Is the TB and Leprosy Unit Register available (at health facilities)? (multi)
Data Field Name : INT_TBLcentralregister
Possible responses:
- Yes
- No
- NA

67:Is the Sputum Register available? (multi)
Data Field Name : INT_sputumregister
Possible responses:
- Yes
- No
- NA

68:You have reached the end of the form. Thank the person for their time and information. The next part of the interview will require looking at commodities in the storeroom and speaking with the person who oversees the store. (label)

Survey Name : TZ_3_StockStatus_FINAL
No of Questions:23
===
1:This form will be used to assess the stock status of select products on the day of the visit. The answers to these questions will come from records at the facility, and by conducting a physical inventory. (label)

2:Facility HMIS Code (this will be used as the unique identifier for this facility) (text)
Data Field Name : Facillity_HMIS_Code

3:Select facility type (multi)
Data Field Name : SS_ftype
Possible responses:
- Warehouse ⟶ Skip to Q5
- District Hospital ⟶ Skip to Q5
- Regional Hospital ⟶ Skip to Q5
- Health Centre ⟶ Skip to Q5
- Dispensary ⟶ Skip to Q5
- FBO/Private Hospital ⟶ Skip to Q5
- Hospital ⟶
- Other

4:Specify "other" for facility type. (text)
Data Field Name : SS_ftype_oth

5:Select the next commodity to be assessed from the list of products below (multi)
Data Field Name : SS__CommodityName
Possible responses:
- Streptomycin injection
- 4 FDC - RHZE (Rifampicin 150mg + Isoniazid 75 mg + Pyrazinamide 400mg + Ethambutal 275mg)
- 3 FDC - RHE(Rifampicin + Isoniazid + Ethambutal)
- 2 FDC- RH(Rifampicin and Isoniazid)
- 3 FDC - RHZ (peds)- (Rifampin + Isoniazid + Pyrazinamide)
- 2 FDC - RH (peds)- (Rifampicin and Isoniazid)
- MB- (ad)Rifampicin + Dapsone
- PB- (Ad) Rifampicin + Clofazimine + Dapsone
- MB- (Peds)- Rifampicin + Dapsone
- PB- (peds)- Rifampicin + Clofazimine + Dapsone

6:Has this commodity been dispensed/issues/managed at this health facility in the last six months (March 1 - July 31)? (multi)
Data Field Name : SS__Managed
Possible responses:
- Yes
- No ⟶ Skip to Q23

7:What is the unit of count for this commodity being assessed (e.g. vials, blisters, tablets etc)? (multi)
Data Field Name : Unit_of_Count
Possible responses:
- Vial
- Blister pack
- Tablets

8:What is the physical count of this commodity today (in the store room and dispensary)? (Use the smallest unit of count. E.g. piece or vial or tablet) (number)
Data Field Name : SS__Physical_Inventory

9:Is the facility stocked out of this commodity today? (multi)
Data Field Name : SS__Stockout
Possible responses:
- Yes
- No

10:What is the quantity of this commodity that is expired as of today's visit? (number)
Data Field Name : SS__QtyExpToday

11:Is the stock card available for this commodity? (multi)
Data Field Name : SS__StockCardAvailable
Possible responses:
- Yes
- No ⟶ Skip to Q23

12:Has the stock card for this commodity been updated within the past 30 days? (If stock card was last updated with balance of 0 and facility has not received any resupply, consider the stock card up to date) (multi)
Data Field Name : SS__StockcardUpdated
Possible responses:
- Yes
- No

13:Date stock card was last updated (date)
Data Field Name : SS_stockcarddate

14:What is the balance recorded on the stock card for this commodity? (number)
Data Field Name : SS__BalanceStockcard

15:According to the stock card, has there been a stockout of this product in the most recent six months? (multi)
Data Field Name : SS__Stockoutlast6months
Possible responses:

- Yes
- No ⟶ Skip to Q20

16:According to the stock card, how many stockouts have there been in the most recent six months? (number)
Data Field Name : SS__NumStockoutslast6months

17:According to the stock card, what is the total number of days that this product was stocked out over the most recent six months? (number)
Data Field Name : SS__TotalDaysStockedout6mon

18:What were the reasons for the stockout(s)? (multi)
Data Field Name : SS_reasonsstockout
Possible responses:
- Did not order on time
- Did not receive product from the higher level
- Did not receive the quantities ordered
- District is stocked out
- Regional Store is stocked out
- MSD Zonal is stocked out
- Issued the commodity to the dispensing area
- No patients currently on this drug
- Other

19:Specify "other" for reasons for stockout(s). (text)
Data Field Name : SS_reasonsstockout_oth

20:According to the stock card, how much of this commodity was issued from this facility during the most recent six months? (number)
Data Field Name : SS__Issued6Months

21:From the last six months, how many DAYS of data are available in the stock card? (For example, 6 mo=180 days, 5 mo=150 days etc.) (number)
Data Field Name : SS__MonthsDataAvailable

22:Are stock cards and reports completed using the smallest unit of count? (multi)
Data Field Name : SS_completedunit
Possible responses:
- Yes
- No
- NA

23:You have completed the questions for this product. Check it off on the list of products on the paper form for this facility, select NEXT and select ADD NEW RECORD. If you have completed all products, select NEXT and select FINISH FOR NOW. (label)

Survey Name : TZ_4_QuantOrder_FINAL
No of Questions:8
===
1:This form will be used to assess the quantity ordered and quantity received. The answers to these questions will come from ordering records at the facility. (label)

2:Facility HMIS Code (this will be used as the unique identifier for this facility) (text)
Data Field Name : Q2_HMIS_Code

3:Select the next commodity to be assessed from the list of products below. (multi)
Data Field Name : QQ__CommodityName
Possible responses:
- Streptomycin Injection
- 4 FDC- RHZE (Ad)
- 2 FDC-RH (Ad)
- 3 FDC- RHE (Ped)
- MB- Rifampicin + Dapsone (Ad)
- PB- Rifampicin + Clofazimine + Dapsone

4:What was the quantity ordered for the last order period? (number)
Data Field Name : QQ__quantord

5:What was the date that the order was placed? (date)
Data Field Name : QQ__datequantord

6:What was the quantity received in the last order? (number)
Data Field Name : QQ__quantreceive

7:What was the date when the order was received? (date)
Data Field Name : QQ__datereceived

8:You have completed the questions for this product. Check it off on the list of products on the paper form for this facility, select NEXT and select ADD NEW RECORD. If you have completed all products, select NEXT and select FINISH FOR NOW. (label)

Survey Name : TZ_5_StorageCond_FINAL
No of Questions:23
===
1:STORAGE CONDITIONS. This form will assess storage conditions at this facility through OBSERVATIONS of the storeroom. Before entering data, take a little bit of time to familiarize yourself with the general layout and conditions of the storeroom. (label)

2:Facility HMIS Code (this will be used as the unique identifier for this facility) (text)
Data Field Name : SC_HMIS_Code

3:Select facility type (multi)
Data Field Name : SC__ftype
Possible responses:
- Warehouse
- District Hospital
- Regional Hospital
- Health Centre
- Dispensary
- FBO/Private Hospital
- Hospital
- Other

4:Specify "other" for facility type (text)
Data Field Name : SC_ftype_oth

5:Commodities that are ready for distribution are arranged so that identification labels and expiry dates and/or manufacturing dates are visible. (multi)
Data Field Name : SC__ProdArrange
Possible responses:
- Yes
- No

6:Commodities are stored and organized in a manner accessible for first-to-expire, first-out (FEFO) counting and general management. (multi)
Data Field Name : SC__OrganizedFEFO
Possible responses:
- Yes
- No

7:Cartons and commodities are in good condition, not crushed due to mishandling. If cartons are open, determine if commodities are wet or cracked due to heat/radiation. (multi)
Data Field Name : SC__GoodCondition
Possible responses:
- Yes
- No

8:The facility makes it a practice to separate damaged and/or expired commodities from usable commodities and removes them from inventory. (multi)
Data Field Name : SC__SeparateDamaged
Possible responses:
- Yes
- No

9:Commodities are protected from direct sunlight. (multi)
Data Field Name : SC__ProtectedSunlight
Possible responses:
- Yes
- No

10:Cartons and commodities are protected from water and humidity. (multi)
Data Field Name : SC__ProtectedH2O
Possible responses:
- Yes
- No

11:Storage area is visually free from harmful insects and rodents. (Check the storage area for traces of bats and/or rodents [droppings or insects].) (multi)
Data Field Name : SC__InsectsRodents
Possible responses:
- Yes
- No

12:Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel. (multi)
Data Field Name : SC__LockKey
Possible responses:
- Yes
- No

13:Commodities are stored at the appropriate temperature according to product temperature specifications. (multi)
Data Field Name : SC__Temperature
Possible responses:
- Yes
- No

14:Roof is maintained in good condition to avoid sunlight and water penetration. (multi)
Data Field Name : SC__Roof
Possible responses:
- Yes
- No

15:Storeroom is maintained in good condition (clean, all trash removed, sturdy shelves, organized boxes). (multi)

Data Field Name : SC__Storeroom

Possible responses:

- Yes
- No

16:The current space and organization is sufficient for existing commodities and reasonable expansion (i.e., receipt of expected product deliveries for foreseeable future). (multi)

Data Field Name : SC__CurrentSpace

Possible responses:

- Yes
- No

17:Fire safety equipment is available and accessible (any item identified as being used to promote fire safety should be considered). (multi)

Data Field Name : SC__FireSafety

Possible responses:

- Yes
- No

18:Commodities are stored separately from insecticides and chemicals. (multi)

Data Field Name : SC__SeparateChemicals

Possible responses:

- Yes
- No

19:Is this facility large enough to require stacking of multiple boxes? (multi)

Data Field Name : SC_requirestacking

Possible responses:

- Yes
- No

20:Commodities are stacked at least 10 cm off the floor. (multi)

Data Field Name : SC__StackedProperly

Possible responses:

- Yes
- No
- No stacked boxes/ NA

21:Commodities are stacked at least 30 cm away from the walls and other stacks. (multi)

Data Field Name : SC__awaywall

Possible responses:

- Yes

- No

22:Commodities are stacked no more than 2.5 meters high. (multi)
Data Field Name : SC__stackedhigh
Possible responses:
- Yes
- No

23:You have completed the storage conditions for this facility. Select NEXT, and on the next screen choose FINISH FOR NOW. Record any observations on the paper form for this facility. (label)

Survey Name : TZ_6_Warehouse_Final (for district and regional store personnel)
No of Questions:41
==
1:REGIONAL STORE QUESTIONNAIRE. The questions in this form will be completed through interviews with REGIONAL STORE personnel responsible for managing TB and Leprosy commodities. (label)

2:Warehouse Code (this will be used as the unique identifier for the warehouse) (text)
Data Field Name : WH_code

3:What is your name? (text)
Data Field Name : WH_name

4:What is your title? (text)
Data Field Name : WH_title

5:What is your mobile phone number, if you have one? (If no phone, answer "No mobile phone") (text)
Data Field Name : WH_mobile

6:How long have you worked at this facility? (Enter total value in months. 1 year=12mo, 2yrs=24mo, 3yrs=36mo) (number)
Data Field Name : WH_timeworked

7:Who is the principal person responsible for managing TB and leprosy commodities at this facility? (multi)
Data Field Name : WH_principal
Possible responses:
- Store Keeper
- Store Officer
- Pharmacist
- Pharmacy Technician
- Pharmacy Assistant
- MIS Manager
- Other

8:Specify "other" for Principal person (text)
Data Field Name : WH_principal_oth

9:Is commodities/stock management the primary role of this person at this facility? (multi)
Data Field Name : WH_primaryrole
Possible responses:
- Yes
- No

10:The following questions refer to stock keeping logistics forms used to manage TB and

Leprosy health commodities at the regional store (label)

11:Do you use BIN CARDS to manage TB and Leprosy health commodities at this warehouse? (multi)
Data Field Name : WH_bincards
Possible responses:
- Yes
- No

12:Do you use OTHER FORMS to manage TB and Leprosy health commodities? (multi)
Data Field Name : WH_otherforms
Possible responses:
- Yes
- No ⟶   Skip to Q14

13:Specify "other" for stock keeping forms to manage TB and Leprosy health commodities. (text)
Data Field Name : WH_otherforms_specify

14:Is there an electronic system for managing the stock at this store? If yes, ask "what type?" (multi)
Data Field Name : WH_system
Possible responses:
- Yes
- No ⟶   Skip to Q16
- Don`t know

15:If there is an electronic stock management system, what computer program/software do you use to keep track of commodities? (multi)
Data Field Name : WH_electronic
Possible responses:
- Excel
- Access DB
- ERP System
- Other

16:From whom do you receive requests for resupplies for TB and leprosy commodities? (multi)
Data Field Name : Receive_resupply
Possible responses:
- District Store ⟶   Skip to Q18
- Hospitals ⟶ Skip to Q18
- Health Facilities⟶Skip to Q18
- Other

17:Specify "other" for whom receive resupplies for TBL commodities (text)

Data Field Name : Whom_receive_resupplies

18:What form do they primarily use to order TB and leprosy commodities? (multi)
Data Field Name : WH_orderform
Possible responses:
- REPORTING AND REQUISITION Form
- DRUG REPORTING AND ORDERING Form
- DRUG CALCULATION Form
- Drug Reporting form and Drug Calculation Form
- None of the above
- Other

19:To whom do you deliver TB and Leprosy commodities? (multi)
Data Field Name : deliver_commodities
Possible responses:
- Regional hospital
- District store
- Health facilities only
- District and health facilities
- All of the above

20:How are TBL commodities delivered to the lower level? (multi)
Data Field Name : WH_howdelivered_lowerlevel
Possible responses:
- Delivered at the same time as the other essential drugs ⟶ Skip to Q22
- Delivered separately from other essential drugs ⟶ Skip to Q22
- Don't know ⟶ Skip to Q22
- Other

21:Specify "other" for how TBL commodities are delivered to lower level. (text)
Data Field Name : howdelivered_oth_lowerlevel

22:How are TBL commodities delivered this store? (multi)
Data Field Name : TB_commodities_delivered
Possible responses:
- Delivered at the same time as the other essential drugs ⟶ Skip to Q24
- Delivered separately from other essential drugs ⟶ Skip to Q24
- Don't know ⟶ Skip to Q24
- Other

23:Specify "other" for stock keeping forms to manage TB and Leprosy health commodities. (text)
Data Field Name : Copy_of_WH_otherforms_specify

24:Do Faith Based Organizations (FBOs) order TBL commodities from this store? (multi)
Data Field Name : WH_FBO

Possible responses:
- Yes
- No
- Don`t know

25:Do Voluntary Organizations order TBL commodities from this store? (multi)
Data Field Name : WH_VO
Possible responses:
- Yes
- No
- Don`t know

26:Do private hospitals and clinics order TBL commodities from this store? (multi)
Data Field Name : WH_private
Possible responses:
- Yes
- No
- Don`t know

27:What mode of transport is most frequently used to transport medicines from your MSD store? (multi)
Data Field Name : WH_transport
Possible responses:
- Regional Transport
- District Transport
- Public transportation
- Private transport
- Other

28:Specify "other" for the mode of transport that is most frequently used. (text)
Data Field Name : WH_transport_oth

29:How do you determine quantities to order from MSD Zone? (multi)
Data Field Name : WH_quantities
Possible responses:
- Formula (any calculation)
- Based on what MSD Central wants to send ⟶ Skip to Q32
- Available funding ⟶ Skip to Q32
- Previous consumption ⟶ Skip to Q32
- Aggregation of orders from the district ⟶ Skip to Q32
- Don`t know ⟶ Skip to Q32
- Other ⟶ Skip to Q31

30:If a formula is used to determine order quantities, specify the formula. (text)
Data Field Name : WH_formula

31:Specify "other" for how order quantities are determined. (text)
Data Field Name : WH_quantities_oth

32:Is there an Emergency Order Point for TB commodities? (multi)
Data Field Name : EOP
Possible responses:
- Yes
- No ⟶ Skip to Q33
- Don't know ⟶ Skip to Q33

33:If yes, what is the Emergency Order Point for TB commodities (number)
Data Field Name : WH_EOPnumber

34:How often do you place orders with MSD? (multi)
Data Field Name : WH_orderfreq
Possible responses:
- Monthly ⟶ Skip to Q36
- Every two months ⟶ Skip to Q36
- Quarterly ⟶ Skip to Q36
- Other

35:Specify "other" for how often you place orders with MSD central. (text)
Data Field Name : WH_orderfreq_oth

36:Do you submit a stock report? (multi)
Data Field Name : submit_stock_report
Possible responses:
- Yes
- No

37:To whom do you submit your stock report? (multi)
Data Field Name : sub_stock_report
Possible responses:
- RTLP ⟶ Skip to Q39
- NTLP ⟶ Skip to Q39
- Other

38:Specify "other" to whom submitted report, (text)
Data Field Name : other_submitted_report

39:How often do you submit the stock report? (multi)
Data Field Name : tock_report
Possible responses:
- Monthly
- Bimonthly
- Quarterly

- Every six months
- Annually

40:When was the last time submitted stock report? (multi)
Data Field Name : last_time_Stock_report
Possible responses:
- Within the last month
- 1-2 months ago
- 2-3 months ago
- More than 3 months ago

**41:This is the end of the survey. Please thank staff member for their time. (label)**

Annex 7. GIS Maps

Maps for RH on stock keeping records being kept up-to-date, stock outs on the day of visit and in the last six months and distribution methods used for resupplying RH to the health facilities.
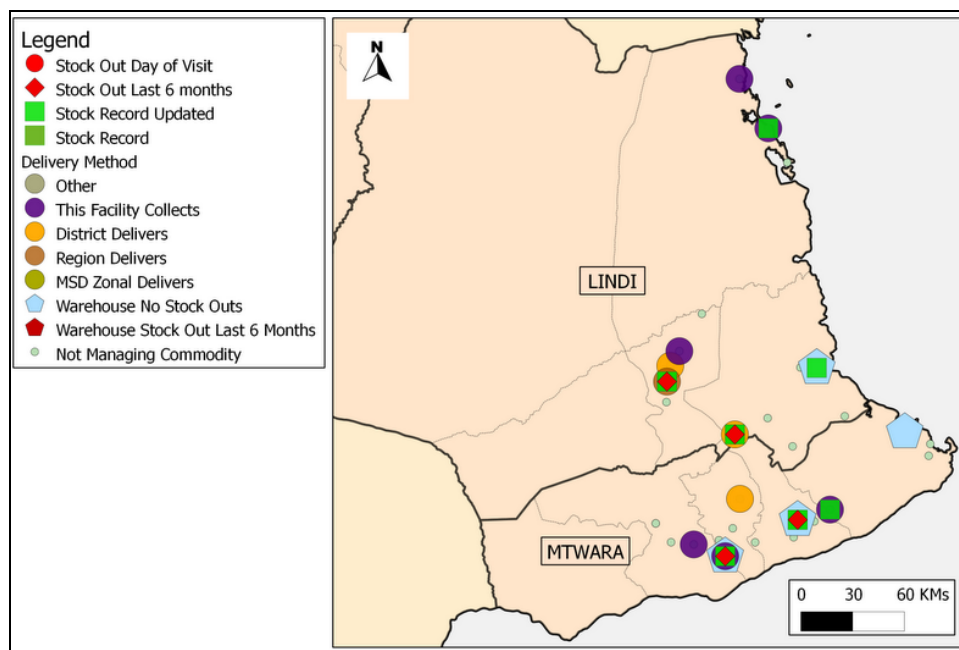
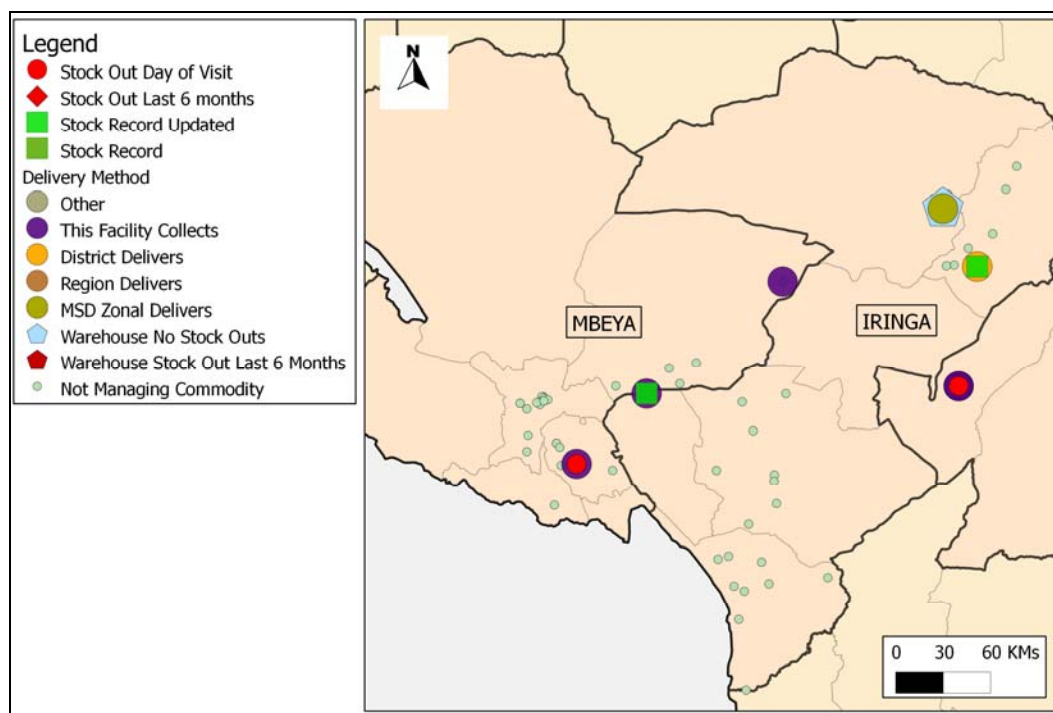**Figure 1. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Arusha**
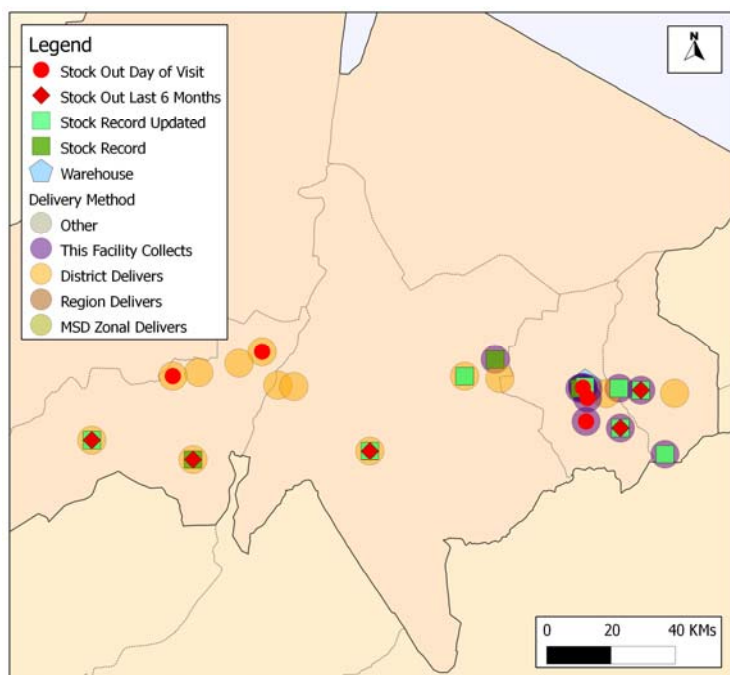
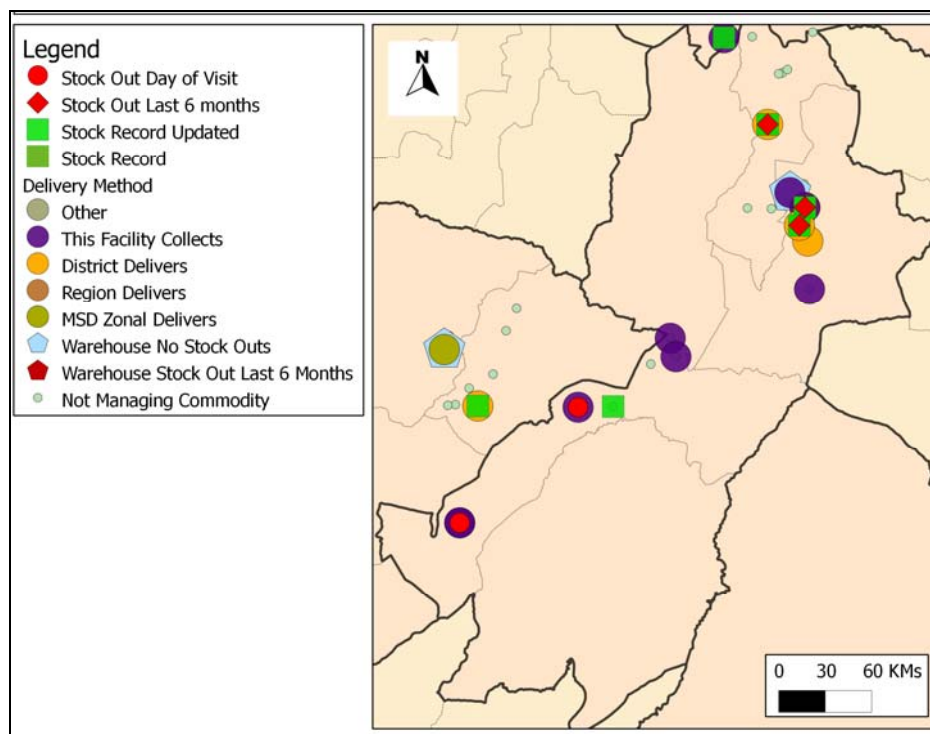**Figure 2: Stockouts as Related to Stock Card Use and Delivery Methods for RH: DSM**
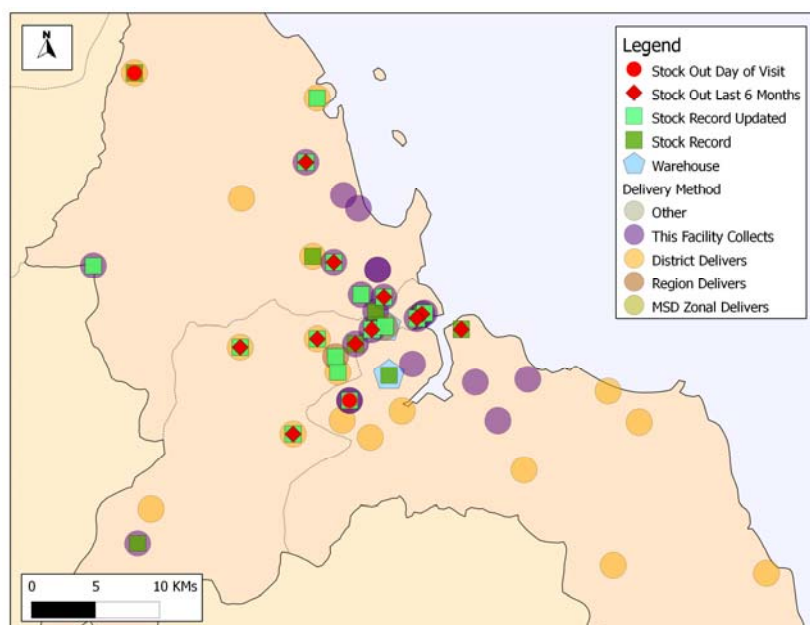
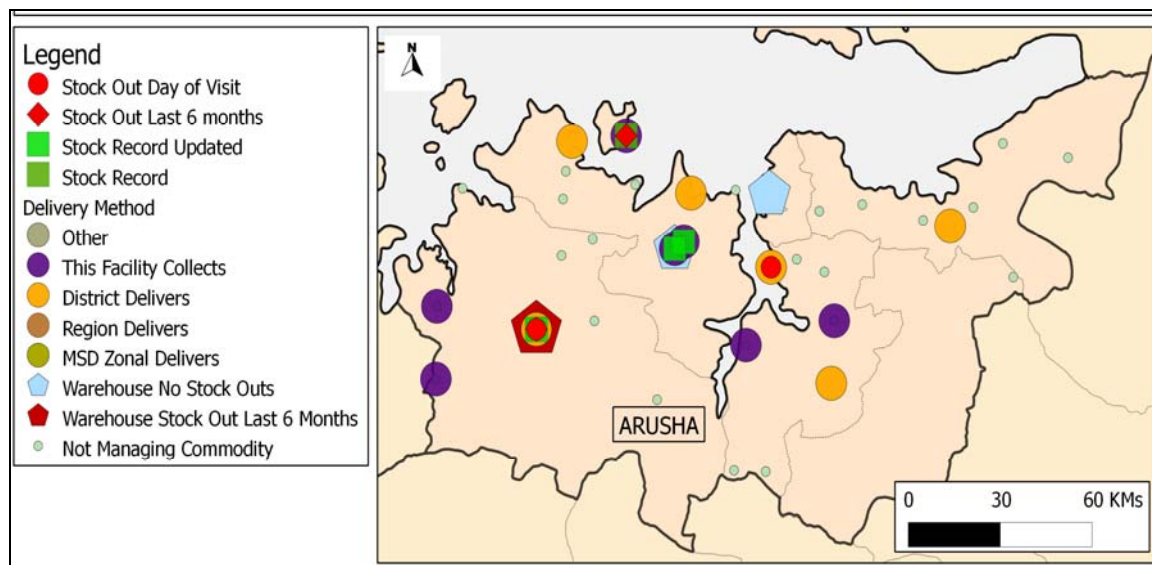**Figure 3. Stockouts as Related To Stock Card Use and Delivery Methods for RH: Lindi and Mtwara**
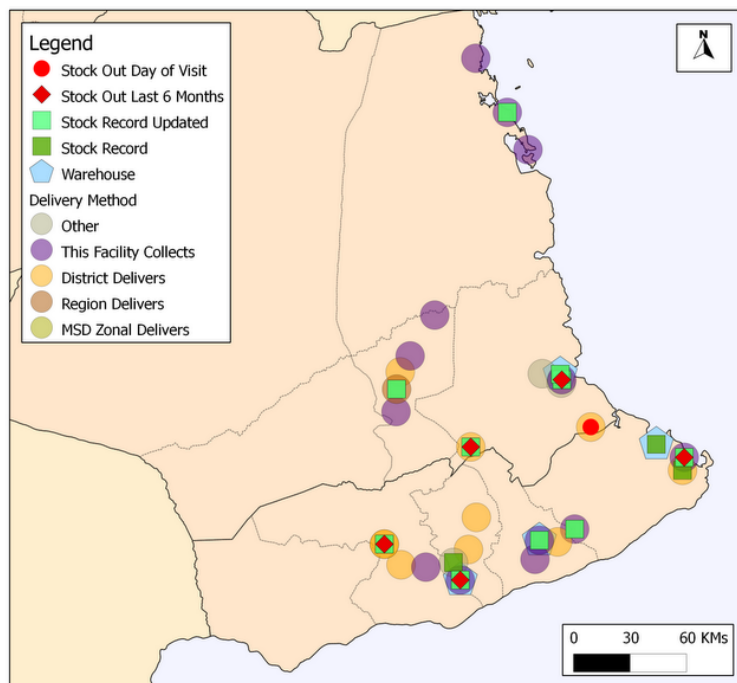
Figure 4. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Mbeya, and Iringa
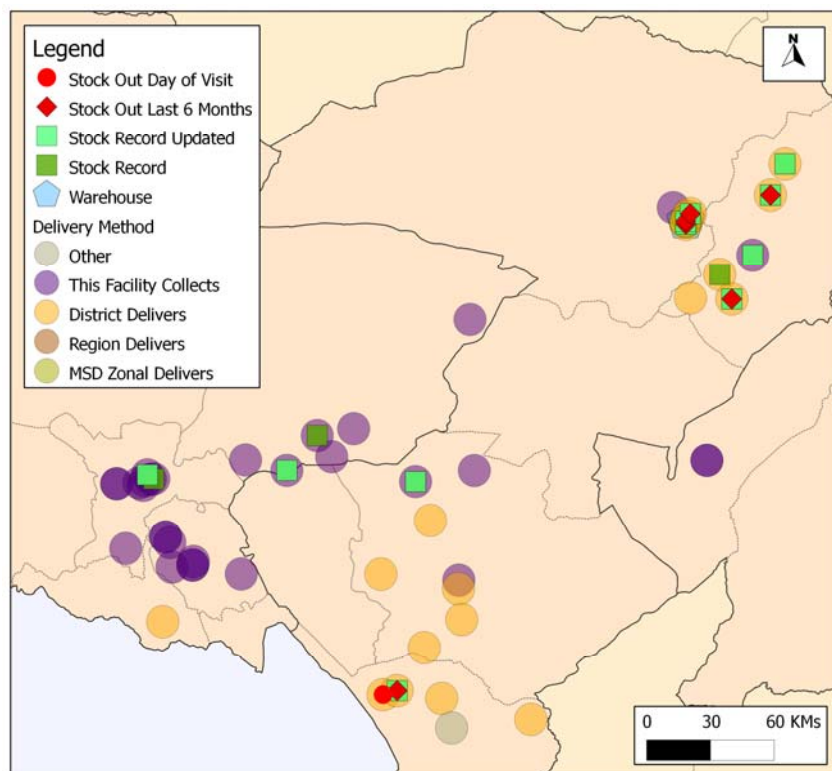
Figure 5. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Morogoro
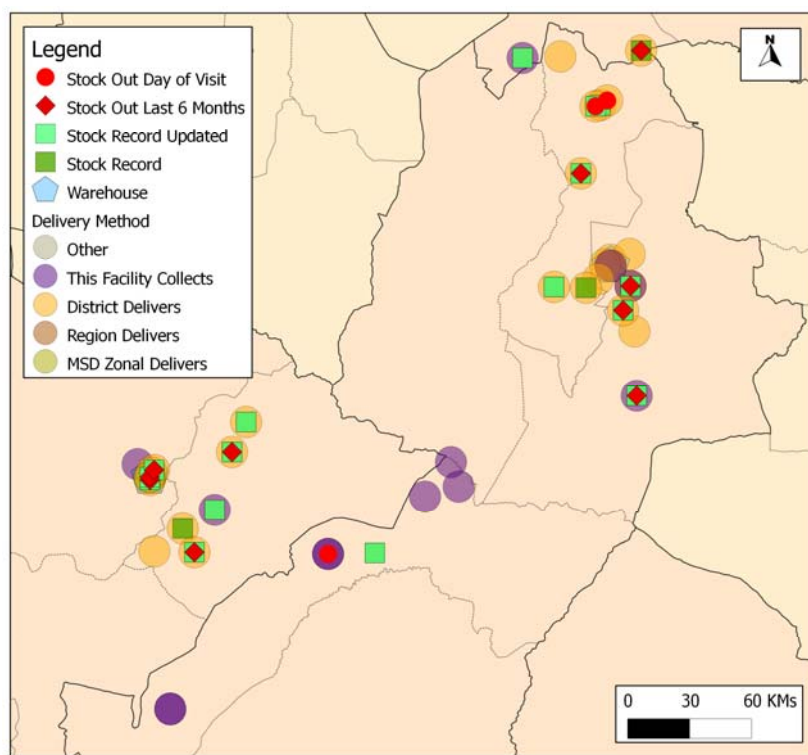
Figure 6. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Mwanza
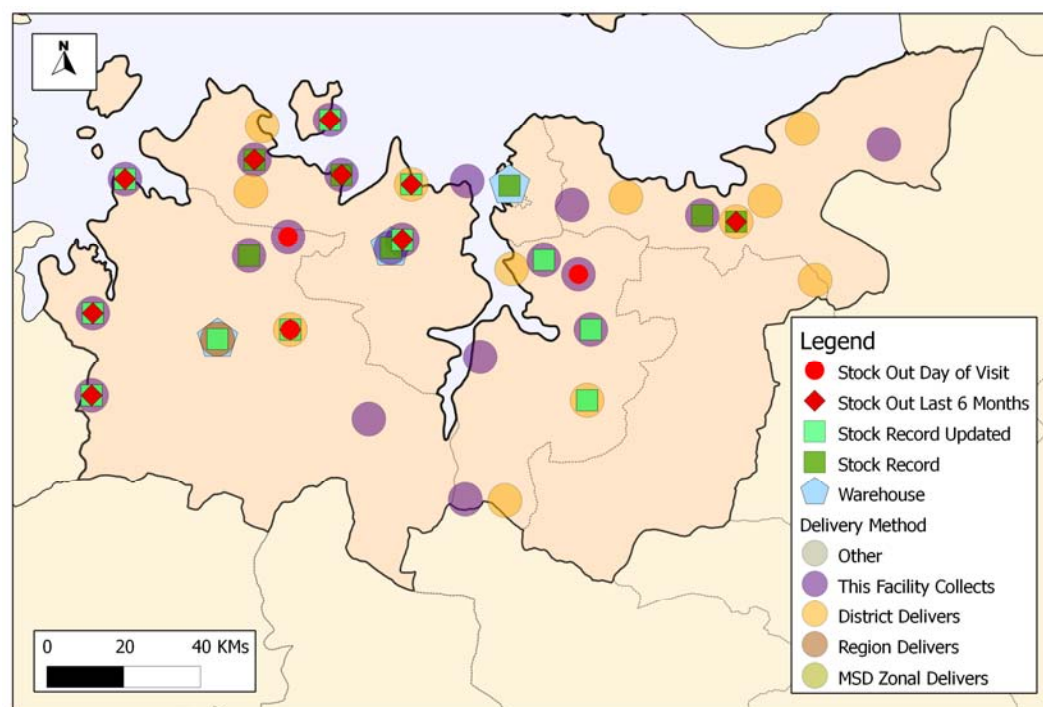
Figure 7. Stockouts as Related to Stock Card Use and Delivery Methods for RH: Tanga
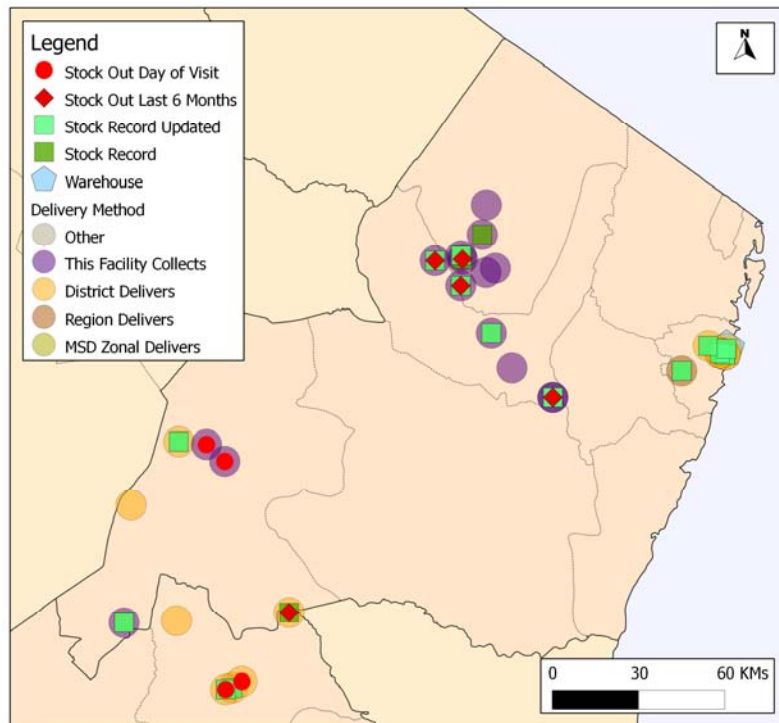
Maps for RHZE on stock keeping records being kept up-to-date, stock outs on the day of visit and in the last six months and distribution methods used for resupplying RHZE to the health facilities.

**Figure 8. Stockouts as Related to Stock Card Use and Delivery Methods for RHZE: Arusha**
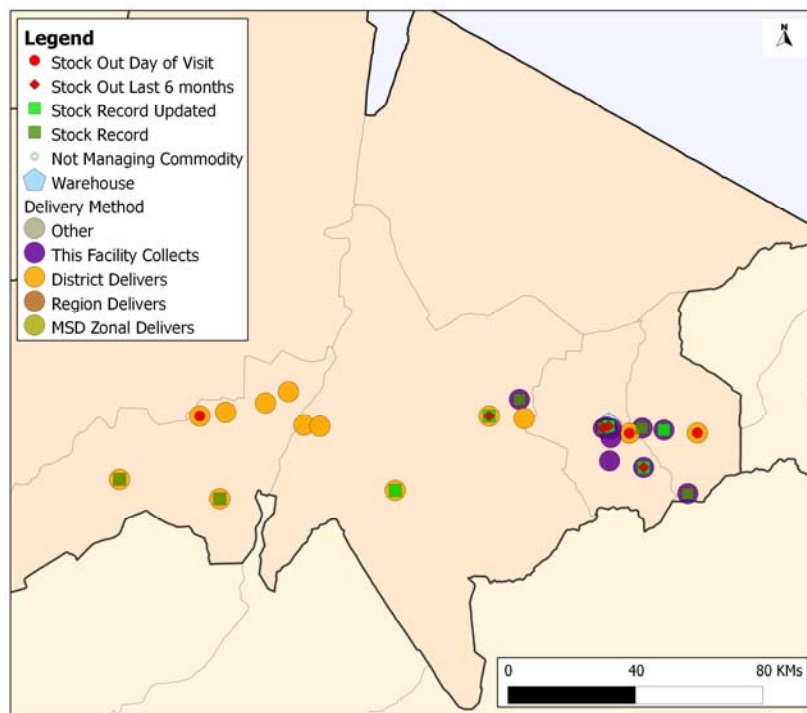
Figure 9. Stockouts as Related to Stock Card Use and Delivery Methods for RHZE: DSM
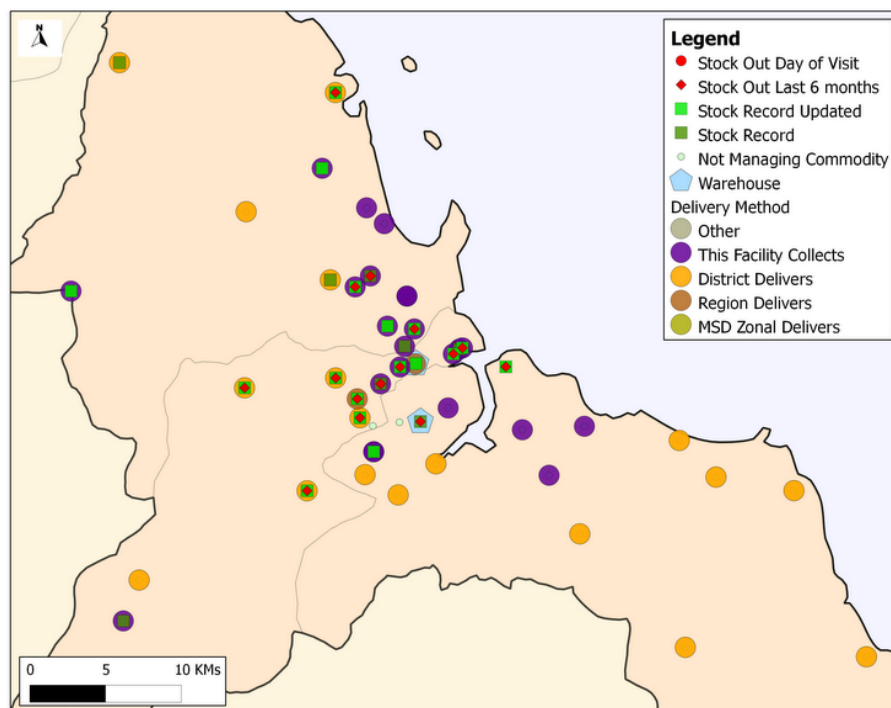
**Figure 10. Stockouts as Related to Stock Card Use and Delivery Methods for RHZE: Lindi and Mtwara**
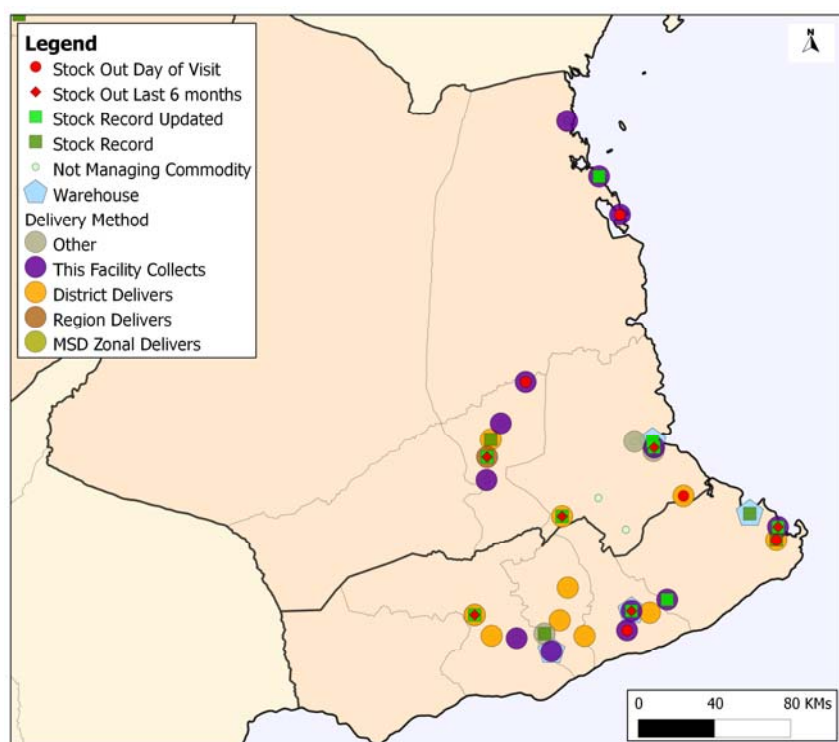
Figure 11. Stockouts as Related to Stock Card Use and Delivery Methods for RHZE: Mbeya and Iringa
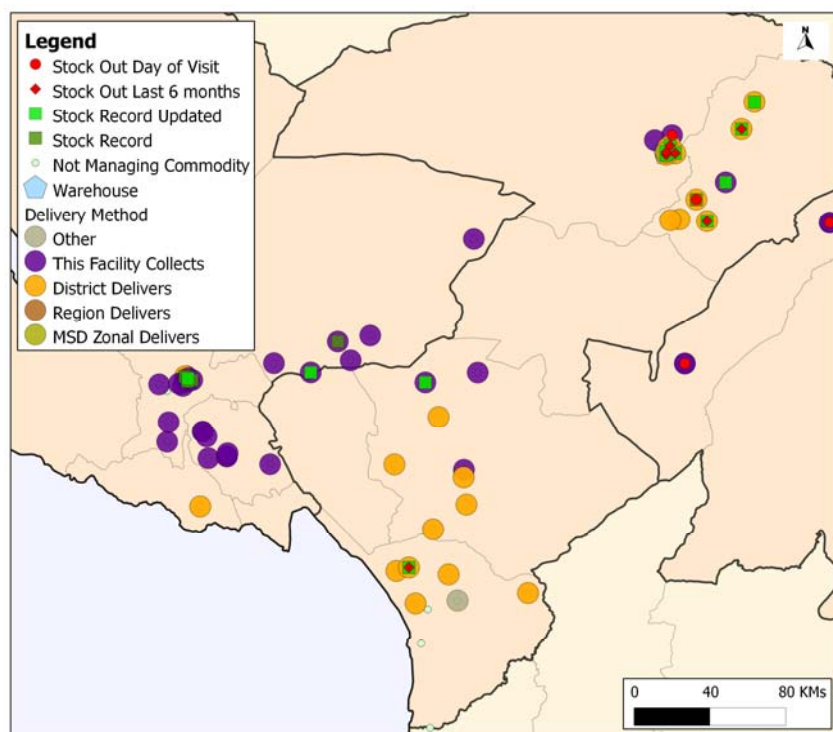
Figure 12. Stockouts As Related to Stock Card Use and Delivery Methods for RHZE: Morogoro
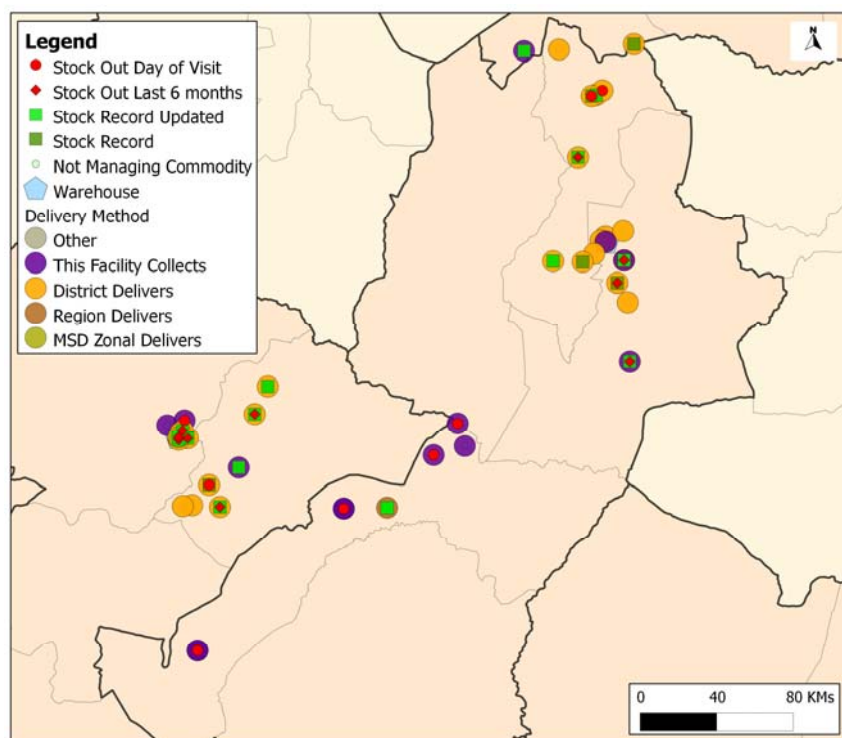
Figure 13. Stockouts as Related to Stock Card Use and Delivery Methods for RHZE: Mwanza

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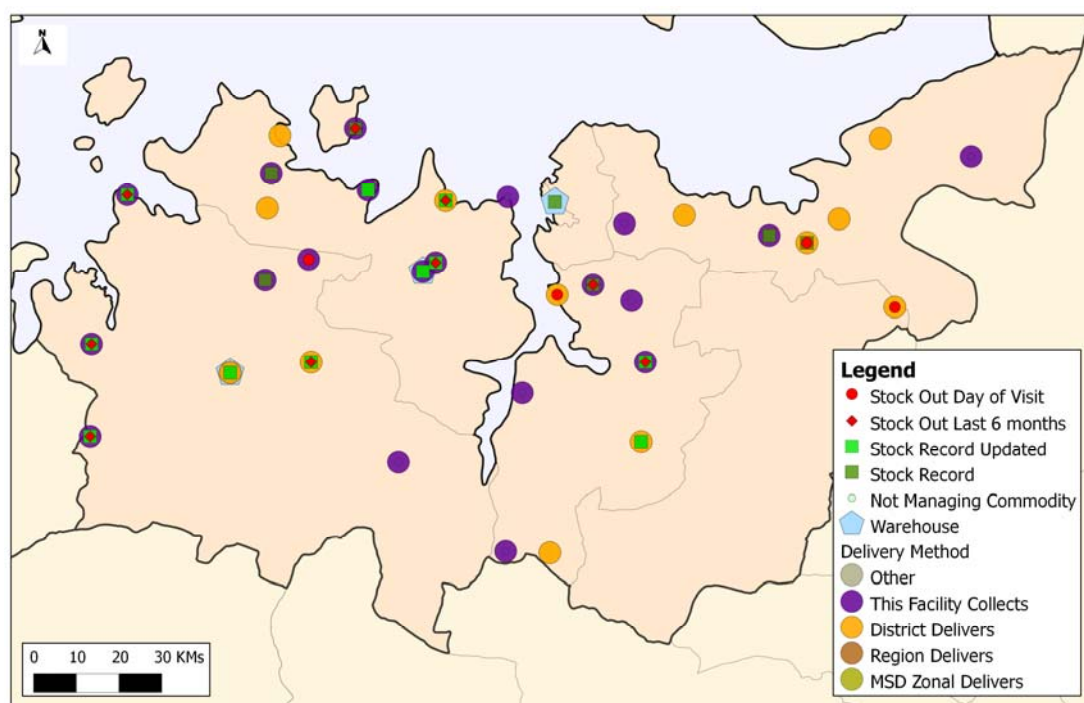
**Figure 14. Stockouts as Related To Stock Card Use and Delivery Methods for RHZE: Tanga**
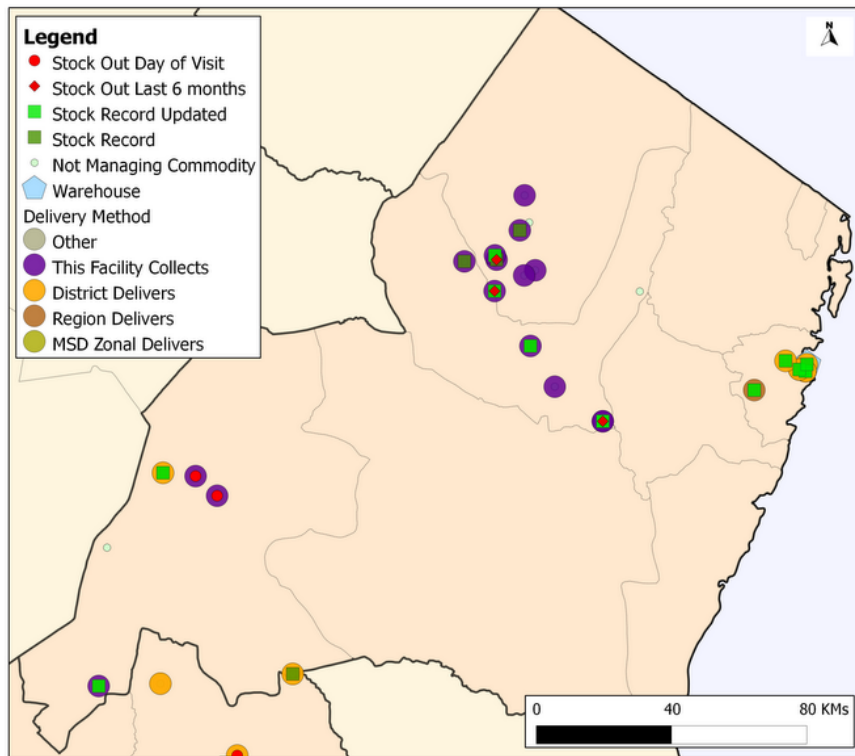
Maps for MB on stock keeping records being kept up-to-date, stock outs on the day of visit and in the last six months and distribution methods used for resupplying MB to the health facilities.

Figure 15. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Arusha
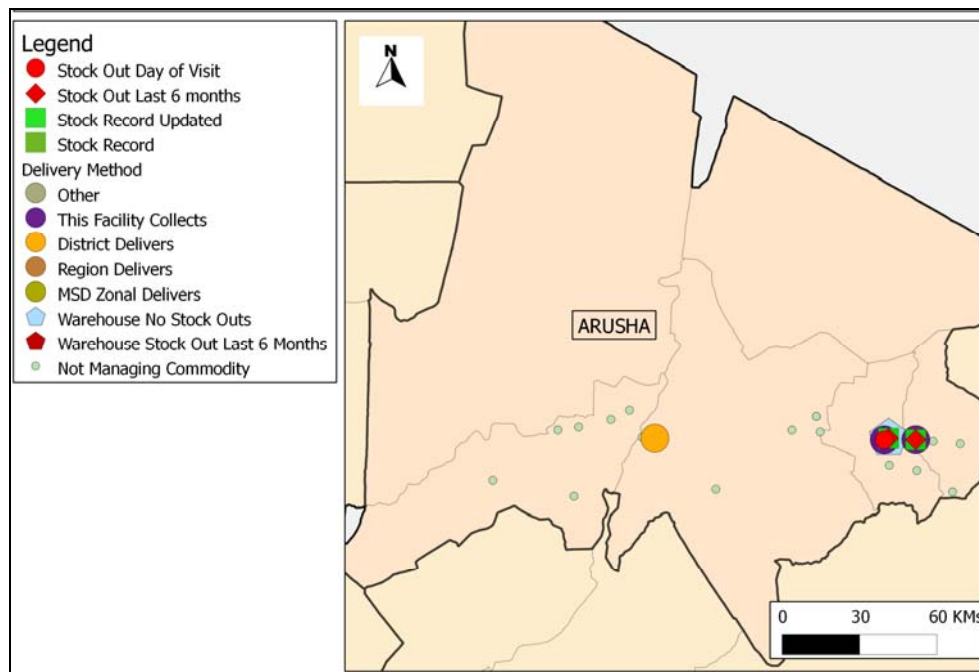
Figure 16. Stockouts as Related to Stock Card Use and Delivery Methods for MB: DSM
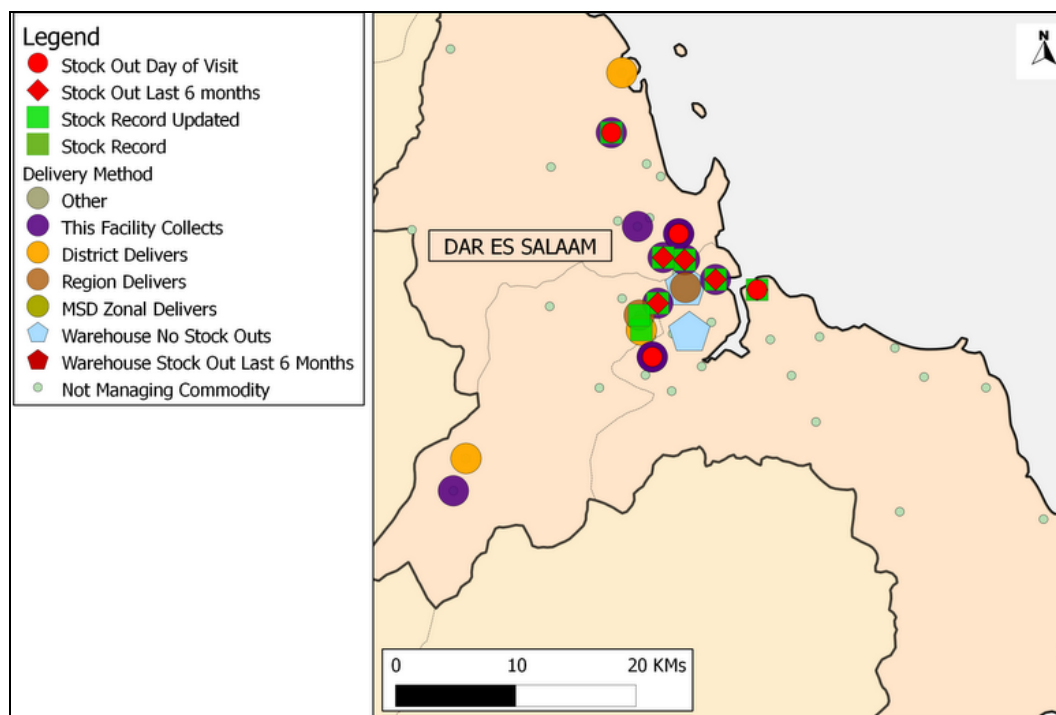
Figure 17. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Lindi and Mtwara

Figure 18. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Iringa and Mbeya

Figure 19. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Morogoro

Figure 20. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Mwanza

Figure 21. Stockouts as Related to Stock Card Use and Delivery Methods for MB: Tanga
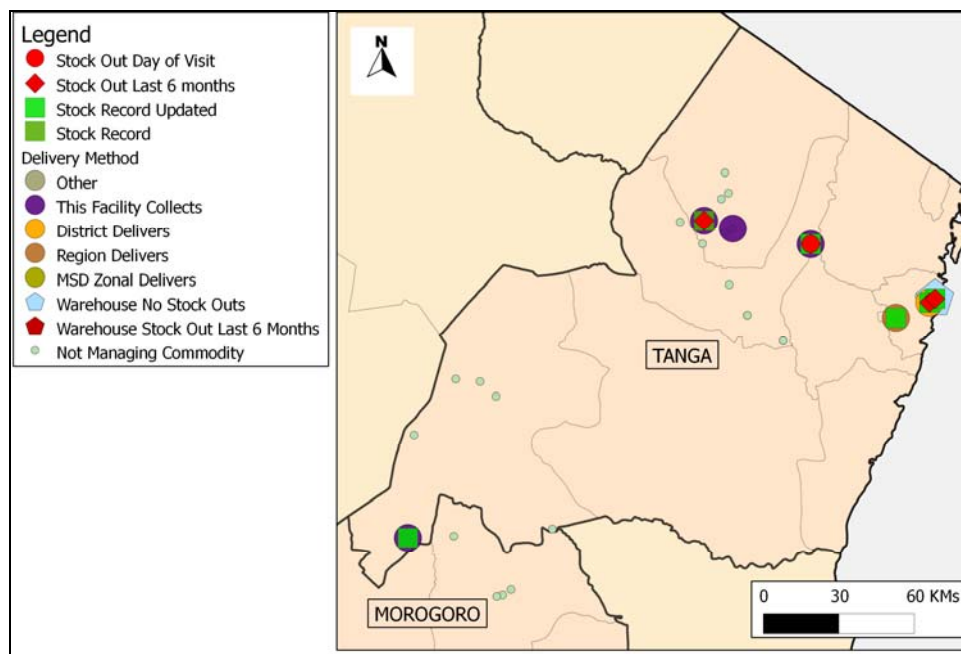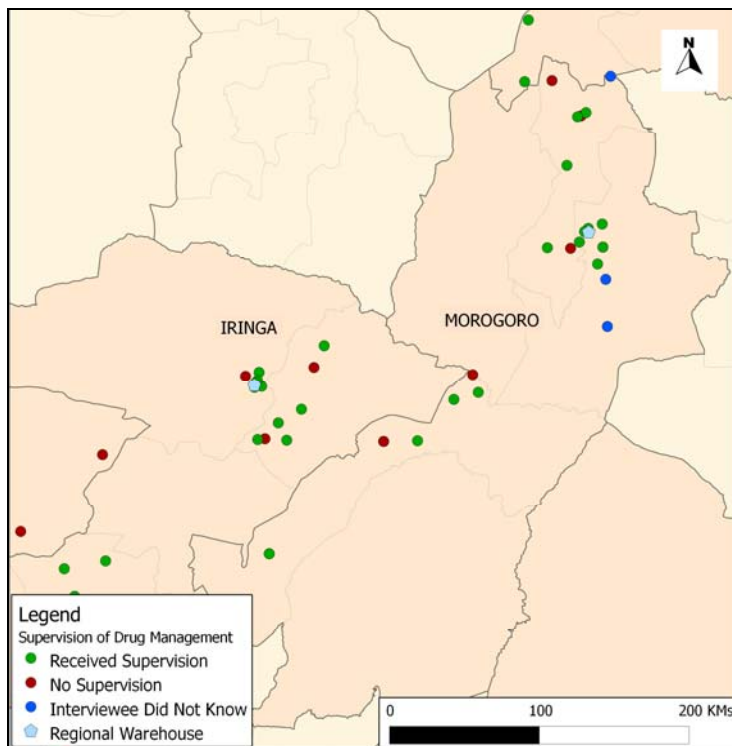

Maps on supervision for drug management

Figure 22. Facilities that Received Supervision Visit For Drug Management: Arusha
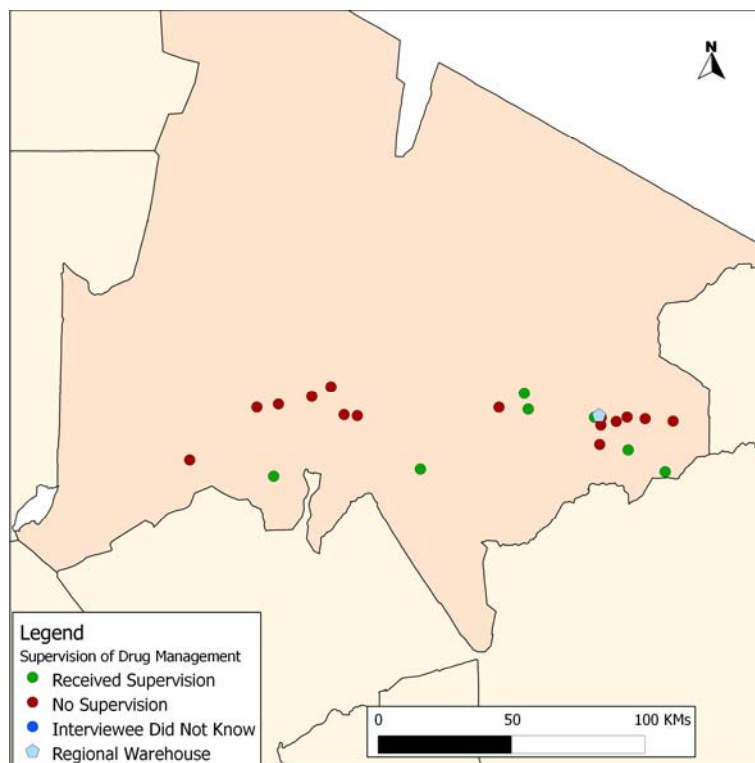
Figure 23. Facilities that Received Supervision Visit for Drug Management: DSM
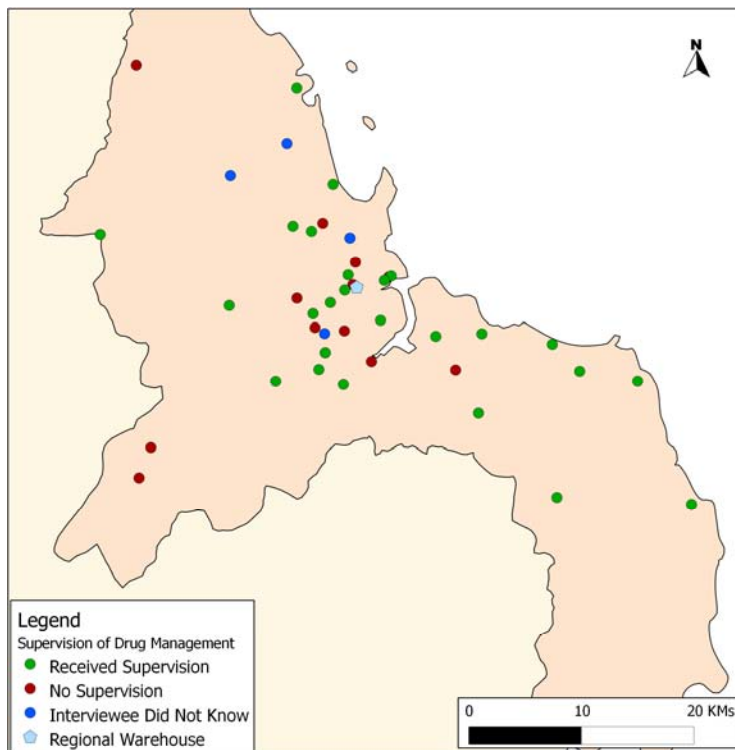
Figure 24. Facilities that Received Supervision Visit for Drug Management: Lindi and Mtwara
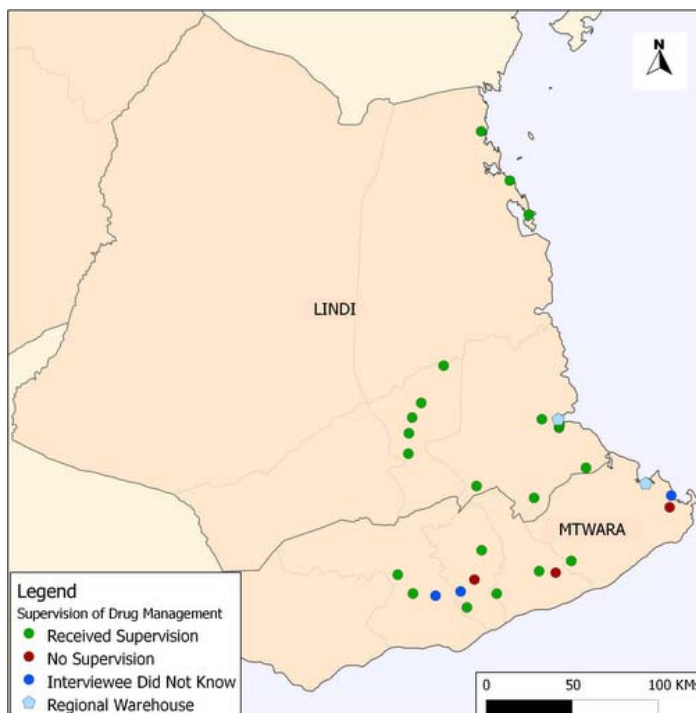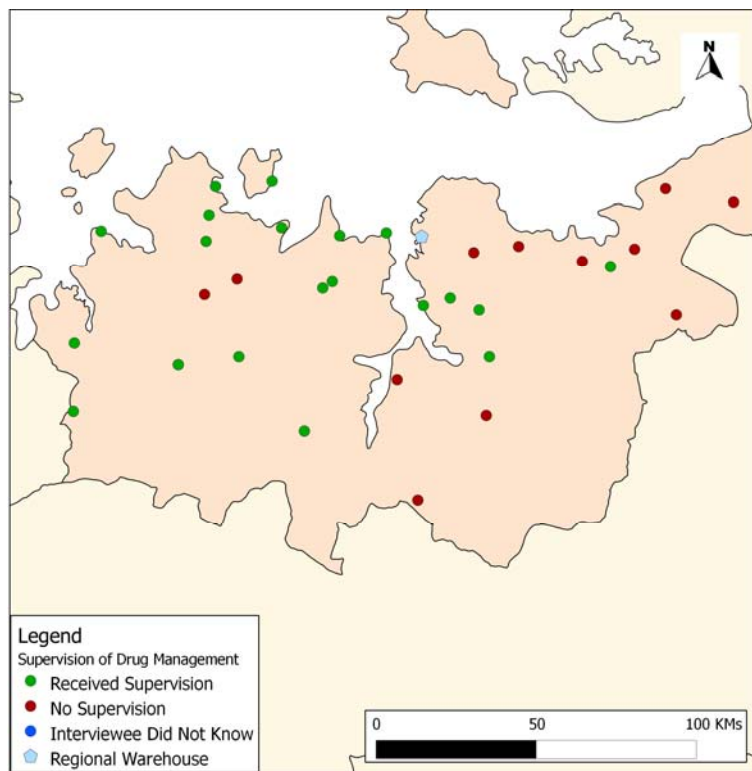
Figure 25. Facilities that Received Supervision Visit for Drug Management: Mbeya and Iringa
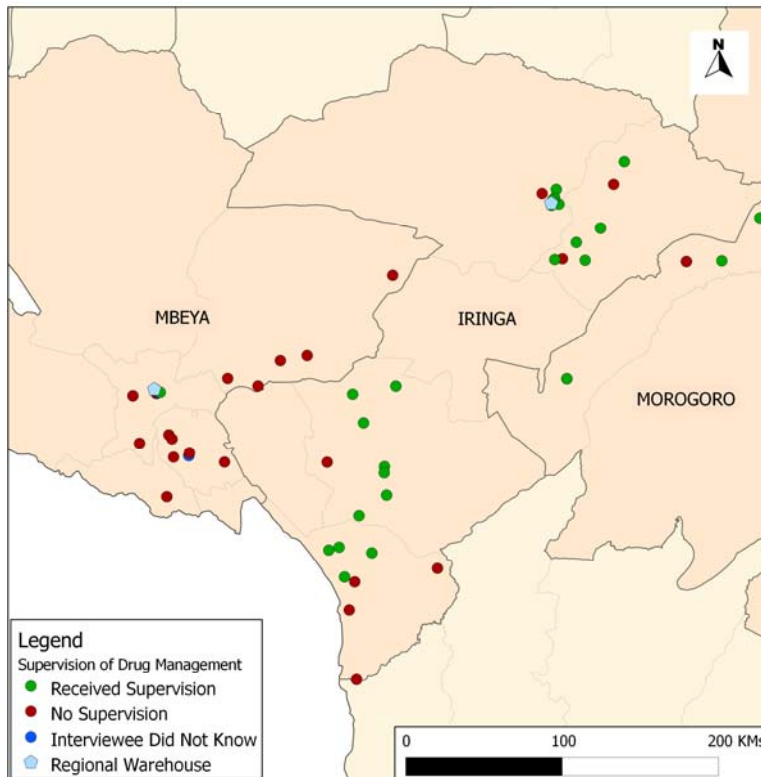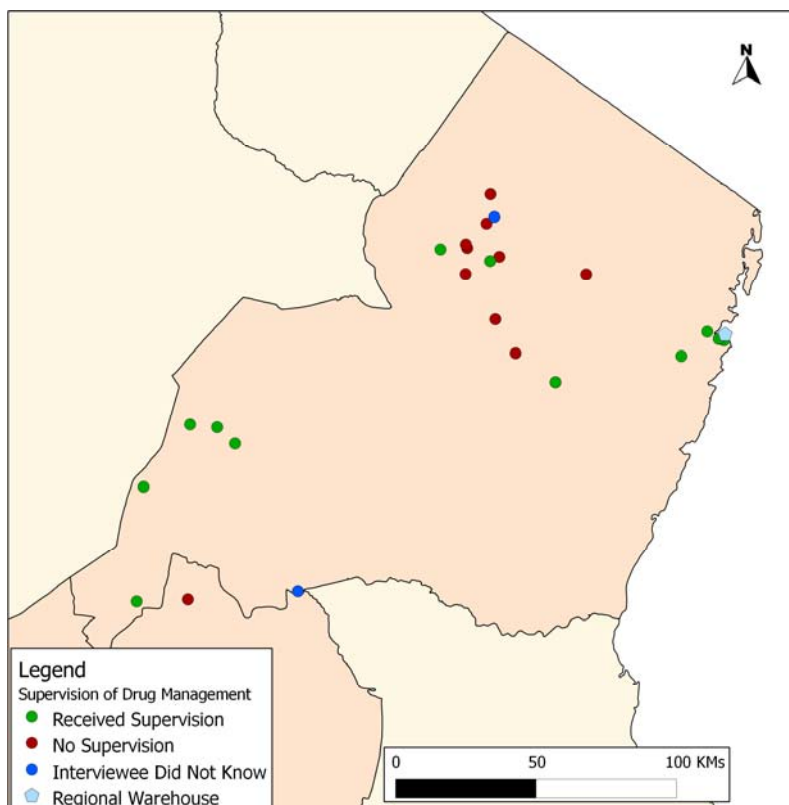

Figure 26. Facilities that Received Supervision Visit for Drug Management: Morogoro

Figure 27. Facilities that Received Supervision Visit for Drug Management: Mwanza

Figure 28. Facilities that Received Supervision Visit for Drug Management: Tanga

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