



# Malawi

## Supply Chain for Neglected Tropical Diseases (SC-NTD)

### Assessment of the supply chain for NTD drugs

April 1 – April 5, 2014

## Acknowledgement

The following report was made possible by the in-depth knowledge and cooperation of the volunteers, health care staff, neglected tropical disease (NTD) program managers and supporting partners interviewed during this assessment. In particular the authors of this report would like to thank the health surveillance assistants (HSAs) working at the forefront of the mass drug administration (MDA) of NTD drugs, and the National Neglected Tropical Disease Control Program (NTDCP) Coordinator, Dr. Square Mkwanda, who personally led this field assessment. Further thanks are due to Mr. Vincent Kaunda of Sightsavers International for leading the “northern team” during the field visit, and to the many members of the NTD control community in Malawi for providing their time and support for the assessment.



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## Acronyms

APOC	African Programme for Onchocerciasis Control
BMGF	Bill & Melinda Gates Foundation
CDD	Community drug distributor
CMS/T	Central medical stores trust
CNTD	Centre for Neglected Tropical Diseases
DMO	District medical officer
HSA	Health surveillance assistants
ITI	International Trachoma Initiative
JSI	John Snow, Inc.
LF	Lymphatic filariasis
MDA	Mass drug administration
MDA1	MDA of ivermectin and albendazole for LF and onchocerciasis in communities
MOH	Ministry of Health
NTD	Neglected Tropical Disease
NTDD	Neglected Tropical Disease Drugs
NTDCP	Neglected Tropical Disease Control Program
PCT	Preventive Chemotherapy
SC-NTD	Improved Supply Chains for NTD Drugs Project (BMGF-JSI)
SCI	Schistosomiasis Control Initiative
SHSA	Senior health surveillance assistants
SMS	Short Message Service
SOPs	Standard operating procedures
STH	Soil-transmitted helminth
T1	MDAs of praziquantel and albendazole for schistosomiasis and STHs for SAC
USAID	United States Agency for International Development
WHO	World Health Organization

## Background and Purpose

The April 2014 Malawi NTD drug supply chain assessment is a key component of a year-long initiative, the Improving Supply Chains for NTDs (SC-NTD) Project, funded by the Bill & Melinda Gates Foundation (BMGF) and carried out by John Snow, Incorporated (JSI). The purpose of the project is to contribute to strengthening “last mile” supply chains for neglected tropical disease (NTD) drugs. In the context of SC-NTD, “last mile supply chains” include all in-country aspects of NTD drug supply from the moment the goods are delivered to the Ministry of Health (MOH) designated warehouse to the point of service delivery at mass drug administration (MDA). Key objectives include the following:

- Identify strengths and weaknesses in existing “last mile” NTD drug supply chains to develop solutions for improving reliability and efficiency, and
- Ensure that proposed last mile solutions are aligned with first mile supply chain partners.

The purpose of the in-country assessment was to identify strengths and weaknesses in Malawi's NTD supply chains. Two members of JSI's SC-NTD Project team, Mr. Steven Perry and Mr. David Papworth, worked with the MOH Neglected Tropical Disease Control Program (NTDCP) team to conduct the assessment from March 18 - April 9, 2014. Each JSI logistician was partnered with an NTDCP designated counterpart to conduct the assessment in all three regions of Malawi. David Papworth and Mr. Vincent Kaunda of Sightsavers International visited the Northern and Central Regions and Dr. Square Mkwanda and Steven Perry visited the Southern Region.

The assessment focused on identifying the quality of both the design and the implementation of the last mile supply chain for NTD drugs in Malawi.

**MINISTRY OF HEALTH MALAWI**

**Filly sheet for recording preventive chemotherapy treatments at drug distribution points**  
*High school and above*

Name \_\_\_\_\_ District \_\_\_\_\_ Health unit \_\_\_\_\_ Village \_\_\_\_\_

Name	Number of previous treated					Status
	1- 4 years	5- 14 years	15- 24 years	25- 49 years	50- 99 years	
1						
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## Findings and Recommendations

## Data Recording & Reporting

## Findings

The logistics management information system used for managing the NTD drug supply is able to provide relatively timely and complete data on numbers of treatments provided and clients “covered” from the lowest levels of the system (health centers and community distribution). This information is collected on standardized tally sheets and registers in the communities and schools by the community drug distributors (CDDs), health surveillance assistants (HSAs), and the school health teachers implementing the MDAs.

MINISTRY OF HEALTH  
NATIONAL INSTITUTE FOR PUBLIC HEALTH  
NATIONAL SCHISTOSOMIASIS TREATMENT REGISTER, PAKISTAN

**SCHISTOSOMIASIS  
TREATMENT REGISTER  
2014 - 2018**

PATIENT ID: \_\_\_\_\_ DATE: \_\_\_\_\_

HEALTH CENTRE: \_\_\_\_\_

VILLAGE: \_\_\_\_\_

SESSION: \_\_\_\_\_

SCI  
Schistosomiasis Control Initiative

COMC RELIEF  
Community Oriented Mass Campaigns

World Health Organization

The information from these primary data records are aggregated and sent up through the system from the health facilities to the districts and then to the central level in annual post-MDA reports. The reports include information on quantities of drugs received, used, wasted and held in balance.

The tally sheet and register data are summarized by HSAs, rather than relying on the community volunteers and teachers, which has resulted in better quality reporting overall. Districts aggregate the health center level data and submit to the national level. One of the big strengths of the Malawi system is the annual post-MDA report review meetings between the national NTD coordinator and the district NTD focal persons. At these meetings the national team and the district staff review both the district reports and the health center reports that are aggregated by the districts, for completeness and coverage. If the districts are missing significant numbers of reports from the health facilities, or are not achieving the target coverage rate they are strongly encouraged to return to the district to chase down missing data and to conduct further “mop-up” of individuals who did not receive the preventive chemotherapy (PCT) drugs during the MDA.

**Oncho & LF Summary Form** Thyolo

Republic of Malawi  
National Onchocerciasis Control & Lymphatic Filariasis Elimination Programme  
COMMUNITY SUMMARY FORM

Period from 18/07/13 to 29/08/13

Identification: Zone: CHYLO DISTRICT: CHYLO  
Health Centre: CHYLO DISTRICT: CHYLO  
Community: CHYLO DISTRICT: CHYLO  
Type of Community: 1 Oncho & LF 2 LF only (PIS circle) 3 Oncho only (PIS circle) 4 LF only (PIS circle) 5 Oncho & LF only (PIS circle) 6 Oncho & LF only (PIS circle) 7 Oncho & LF only (PIS circle) 8 Oncho & LF only (PIS circle) 9 Oncho & LF only (PIS circle) 10 Oncho & LF only (PIS circle) 11 Oncho & LF only (PIS circle) 12 Oncho & LF only (PIS circle) 13 Oncho & LF only (PIS circle) 14 Oncho & LF only (PIS circle) 15 Oncho & LF only (PIS circle)

Census: Number of males: 1225 Number of females: 1225 Total population: 2450  
Number of households: 512  
Children 0-11 months: 58 Children 12-23 months: 58 Total children under five yrs: 116  
Children 5-14 years: 116 Adults 15 years or more: 2234 Total persons 15 yrs or more: 2234

Treatment: Number of males: 557 Number of females: 557 Total treatment: 1114  
Number of hydrocoax: 0 Number of elephantiasis: 0  
Children 5-14 years: 2234 Adults 15 years or more: 2234 No. of households treated: 512

Not treated: Number of males: 668 Number of females: 668 Total not treated: 1336  
Total no. of pregnant women: 0 Total no. of under five children: 116 Total breastfeeding women < 6yrs: 116 Total no. of very sick people: 0

Adverse events: Total number: 0  
Description: Mercuric Iodine Quantity: 0  
Number of tablets ordered: 0 Number of tablets distributed: 0 Number of tablets used: 0 Number of tablets wasted: 0 Number of tablets returned: 0 Number of tablets expired: 0 Number of tablets damaged: 0 Number of tablets lost: 0

Drugs Management: Number of CDS: Male: 1 Female: 1 Drop out: 1 Selected this yr: 1  
Self-monitoring by the community results: Date: 29/08/13  
HSA: M. Sherezi  
District: CHYLO  
Date: 29/08/13

There are three key challenges for data recording and reporting.

- First, there is a critical shortage of stationery. Both the printed tallies and report forms, as well as blank paper for hand-drawing the forms when the supply runs out, were in short supply. The hand-drawn replacements do not always include all the categories of data of the official forms and often align the information in different order which leads to error in aggregation. Because there is a shortage, and because the printed reports do not come in a “multi-copy” format, it was rare that a health facility or even a district would have access to their own last annual (post-MDA) summary report. Hence staff had no way to track progress from one year to the next.

**Summary - MDA-13**

**TOTAL TREATED BY AGE GROUP**

MALE			FEMALE		
1-4yrs	5-14yrs	15-49yrs	1-4yrs	5-14yrs	15-49yrs
0	715	130	0	791	139

**TOTAL TREATED BY SEX**

MALE	FEMALE
845	930

**TOTAL TREATED (MALE + FEMALE)**

1775
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**DRUGS**

NAME	RECEIVED	DISTRIBUTED	LOT	BALANCE
DECORUM 400	3552	42	406	



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- Second, inventory records (i.e. bin cards) were infrequently used at all but the central level to track NTD drug inventory. Even where the drugs were held at well-managed district stores displaying bin cards for all the routine drugs, the NTD campaign drug movements were not recorded on inventory records. Furthermore, the drug supply fields (quantities received, used, in balance) in the health facility annual reports were often not completed even when the other service delivery information were carefully reported.
  - Third, the burden of reporting on the HSAs and senior health surveillance assistants (SHSAs) is considerable and the drug supply data reported is not always aggregated, or used, at higher levels. The HSAs interviewed reported that their biggest difficulty, after funding issues, is the level of effort required for them to compile the head count data and the post-MDA reports.

### ***Recommendations: Data Recording and Reporting***

1. The Malawi NTD Supply Chain Forum (NTDSCF) should quantify needs and costs to ensure full supply of standard records, registers, reports and blank stationery. The quantification should be reviewed with the Task Force and with implementing partners to identify resources to support this relatively small, but important, cornerstone of the NTD program.
2. The annual (post-MDA) Summary Reports should be in multi-copy format to ensure that both the lower and higher level retain a record of performance.
3. The Malawi NTDCP should consider leveraging current mHealth short message service (SMS) reporting being used in the health sector for reporting from the CDD and/or health facility levels. Both the quantification and the drug supply reporting could be converted to SMS reporting that would easily generate quantifications by locale, national supply balances and reports of numbers of treatments dispensed.

## **Human Capacity Development**

### ***Findings***

NTD related staff throughout the system demonstrated relatively high motivation, capacity and performance. There are several core strengths which need to be factored into any discussion of the success of the Malawian NTD program.

- First, unlike other country contexts, the NTD MDAs in Malawi are not implemented entirely by volunteers (CDDs) at the community level. In Malawi the CDDs are partnered by the HSA under the leadership of the SHSA within each health facility's catchment population. The HSAs are a trained and salaried cadre of health outreach workers tasked with serving community health needs throughout the year. They lead the NTD MDAs and work side by side with the CDDs in each village. This results in better



performance in implementation and reporting as the HSAs report to a SHSA who is tasked by the district focal person with achieving coverage targets.

- Second, energetic leadership from the National NTD Coordinator has instilled a culture of accountability in a resource constrained context. An emphasis on achievement is transmitted to the district NTD focal persons. As described above, the national level team meets their district level counterparts in annual, post-MDA review meetings at which performance in reporting and coverage is scrutinized and acted upon. While this sense of mission does not cascade uniformly throughout the country, it is a leading factor in the rapid growth in coverage rates for lymphatic filariasis (LF), onchocerciasis and soil transmitted helminths (STHs) in Malawi.
- Last, every year implementing partners such as the World Health Organization (WHO)/African Programme for Onchocerciasis Control (APOC), BMGF, International Trachoma Initiative (ITI), Centre for Neglected Tropical Diseases (CNTD), Schistosomiasis Control Initiative (SCI), and Sightsavers International provide technical and financial support to the Malawi NTDCP without which the program could not train staff and volunteers in preparation for the MDA campaigns, or cover a host of MDA related costs.

### **Recommendations: Human Capacity Development**

1. The NTDCP should develop brief standard operating procedures (SOPs) for receiving, storing, reporting and returning NTD drugs after MDA. These should be included in the existing NTD booklets used in Malawi as training and reference materials.
2. The NTD Task Force and implementing partners should encourage the integration of the various disease programs now under the integrated NTDCP to facilitate co-implementation of MDAs and reduce the resource burden for supply chain management.

## **Quantification**

### **Findings**

The use of annual community-level head counts to prepare population-based drug quantifications provides a clear, user-friendly system that appears to be institutionalized across the country. HSAs in all locations reported they had the capacity and leadership required to make timely and complete counts each year. The head counts were displayed on wall charts at the health centers and districts and staff at both levels were versed in using them to quantify their NTD drug needs.

NAME OF OFFICE/CLINIC/VILLAGE	TOTAL	M	F	TOTAL
MALUWA	456	96	61	73
ROMAN ULEDI MALONGWE	282	59	46	51
SUZI	116	24	19	21
TCHUKA	191	45	24	20
KHUMALI	247	57	17	15
D.G. LIMBE MPONDA	241	58	32	23
CHIGWIRE	125	25	17	16
TCHU IMA	144	41	15	18
KOTAMO	164	27	22	27
C. MAKOKA	127	27	27	24
MATEWERE MULUMA	101	23	13	19
CHIKHASU	146	31	21	23
IMPRAMBALI	67	13	09	11
SONKHO				
TOTALS	3	13	2409	510 333246

While not necessarily as precise as a “pull” system in which accurate, complete and timely distribution-to-client data are used to calculate needs, the head-count based quantification is more robust. If reports and head counts are not available from lower levels in the system (when needed), the higher level simply “ages” the population of the non-reporting facility from the previous year and uses the derived population data to determine drug requirements.

The national level quantification and ordering process is likewise user-friendly and recently strengthened with the WHO joint application process. When fully implemented this should assist the movement towards integration of the disease programs.

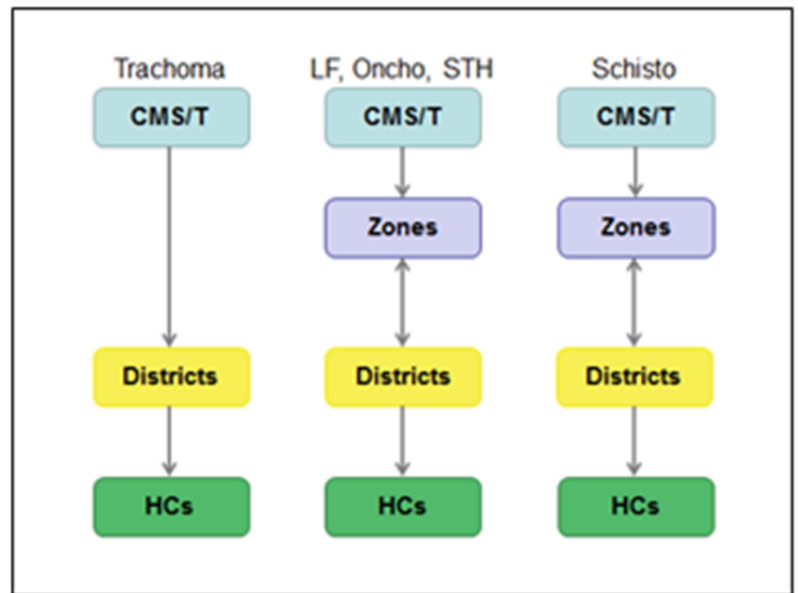
The principal challenge regarding quantification is duplication of effort. The SHSAs reported providing health facility quantifications to the districts and the districts reported using quantifications completed at the district to supply the health facility. Similarly the districts and the central level conducted quantifications for the districts with the central level quantification numbers taking precedence.

## Storage and Transport

### *Findings*

The primary strength of the Malawi NTDCP last mile supply chain has been the creative, problem- solving approaches taken by lead managers to ensure timely drug supply despite resource constraints at all levels. For example, the MDA1 drugs (ivermectin and albendazole) are received and held at the central medical stores trust

(CMS/T) store in Lilongwe, but do not incur any costs for that service. The six percent handling fees<sup>1</sup> charged by CMS/T far exceeds the total, annual NTDCP budget. The National Coordinator negotiated



with CMS/T to provide free central level storage on the condition that CMS/T would not be responsible for either transport or zonal level storage. Likewise, the T1 drugs (praziquantel and albendazole) are held for free at the central level by the customs clearing agents, Allied Freight. Transport of both the MDA1 and T1 drugs is arranged by the National level managers who “borrow” MOH trucks and pay only for fuel and driver per diems to move the drugs to districts; the least costly option possible. The district medical officers (DMOs) are relied upon to store the drugs and transport them to health facilities using

district vehicles and district funds only. Again, very cost effective for the NTDCP compared with other MOH campaigns such as Child Health Days which provide the DMOs with a budget for the drivers and fuel.



The strongest proof of the success of these ad-hoc supply chain strategies are the high coverage rates achieved. Coverage for three of the diseases (onchocerciasis, LF and STHs) were over the eighty percent target in 2013. If the drugs were not available at the right places, in the right quantities at the time of MDA it would not be possible to reach these levels of coverage.

There are three key supply chain challenges that could disrupt NTD drug availability and result in low coverage rates and extended timelines for disease elimination. They are: 1) high cost of multiple supply chains, 2) capacity constraints at the lower levels, and 3) vulnerability of the ad-hoc supply chain solutions.



- The first challenge is the cost of operating three supply chains for only five drugs distributed once or twice a year. Even at the central level, NTD drugs are split between two warehouses (CMS/T in picture on the left & Allied Freight on the right). While the space is provided for free, the effort to track and manage the drugs is increased from the start. Likewise, the costs for transporting the drugs to the districts and then the health facilities are doubled and even tripled as the trachoma program expands its coverage. The MOH ten-ton trucks will roll to the same district three times in a single year with NTD drugs when they could easily be transported together if they were stored together at the central level and if the MDA campaigns could be temporally coordinated. Please note the diagram above which describes the current NTD drug supply chains in Malawi.
- The second challenge is district storage and transport capacities. The NTDCP works through district systems to implement the MDAs and relies on district pharmacies to store campaign drugs and district vehicles to distribute them to the health facilities. This is an “in-built” stress point for the supply chains as the district stores are generally at capacity even without the annual “flood” of NTD campaign drugs. When they arrive the MDA drugs are often stored in hallways, offices or training rooms within the district hospital complex. Because of the ad-hoc storage solutions and the relatively short time the drugs are intended to be held at the district, they are not managed as well as the routine drugs (e.g., no inventory records kept).



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DMOs interviewed were concerned that the NTD MDA campaigns did not provide funding for the use of the district vehicles and drivers as did other campaign programs. This left the burden on the district to ensure that their vehicles, drivers and fuel would be available and adequate for the job. And as the three NTD MDA campaigns take place in different months, the burden on the district is multiplied. District vehicles, most often ambulances, are an over-subscribed resource and competition for their use a factor in supply decision-making. DMOs were stretched to provide transport for the annual roll-out of the NTD drugs and even less willing to send the vehicles around to all the health facilities after the campaigns to collect the unused drugs. Lack of available transport is certainly a key factor and the lack of reverse logistics results in higher wastage of the donated drugs. Reverse logistics for the remaining NTD drugs is further inhibited by the lack of transport and transport funds for the HSAs and SHSAs. They were not always compensated for bus fares when travelling to the districts and hence less motivated to return unused drugs themselves.

- The third challenge is an extension of the first two. The ad-hoc and under-resourced supply chain solutions are vulnerable. They rely on actors outside the program's control and represent a risk to achieving the London Declaration goals. If CMS/T were to insist on handling fees or if Allied Freight ceased to be the clearing agent, the program would need to (quickly) identify alternative central level storage and identify the required resources. Likewise, the reliance on district storage and transport is a stress on DMO resources which already compromises proper management of drugs remaining after MDA. The logic of PCT MDA requires there be no bad years in which the drugs were not in adequate supply at the community level. A last mile supply chain failure in one year risks additional years of PCT MDA campaigns and their attendant costs.

### ***Recommendations: Storage and Transport***

1. The NTDCP should be encouraged and supported to move towards a single supply chain system for the various MDAs. This implies coordination of the timing of international shipments, MDA campaigns and agreements with DMOs, as well as national level coordination under the post of the national NTD coordinator.
2. *Immediate-term*: The NTDCP should quantify the costs for fuel and driver per diems to both distribute NTD drugs from the districts, and collect drugs remaining after MDA at the health facilities. The costing should be reviewed with the Task Force and with implementing partners to identify resources for support. Furthermore, the NTDCP should be supported to identify additional (temporary) district storage capacity to be used for the NTD drugs at the time of campaign only. Solutions might include unused but dry and secure space within the district health office compound, within a neighboring school or government facility or even commercial space.
3. *Longer-term*: The NTDCP should move from three ad-hoc supply chain solutions to a single supply chain solution contracted to a third party provider. Two such providers are currently serving the public health sector and are both efficient and cost-effective in ensuring full supply down to the health facility level



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