



DRC LMIS ASSESSMENT

SCMS, SIAPS, IHP, USAID | DELIVER PROJECT, Task Order 7
05/02/2014

Projet de Santé Intégré
en République Démocratique du Congo



USAID
DU PEUPLE AMERICAIN



OSC LTD
Overseas Strategic Consulting, LTD



SIAPS
Systems for Improved Access
to Pharmaceuticals and Services

SCMS



USAID | DELIVER PROJECT
FROM THE AMERICAN PEOPLE

SCMS

The Supply Chain Management System (SCMS) was established to enable the unprecedented scale up of HIV/AIDS prevention, care, and treatment programs in the developing world. SCMS procures and distributes essential medicines and health supplies, works to strengthen existing supply chains in the field, and facilitates collaboration and the exchange of information among key donors and other service providers. SCMS is an international team of 13 organizations funded by the US President's Emergency Plan for AIDS Relief (PEPFAR). The project is managed by USAID. This document was made possible through support provided by PEPFAR through USAID under the terms of contract number GPO-I-00-05-00032-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of USAID or the US Government.

SIAPS

This report is made possible by the generous support of the American people through the US Agency for International Development (USAID), under the terms of cooperative agreement number AID-OAA-A-11-00021. The contents are the responsibility of Management Sciences for Health (MSH) and do not necessarily reflect the views of USAID or the United States Government. The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to assure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

IHP

Funded by USAID and implemented by MSH, the International Rescue Committee (IRC) and Overseas Strategic Consulting, Ltd (OSC), the Integrated Health Project (IHP) in the Democratic Republic of Congo (DRC) supports the country's National Health Development Program. DRC-IHP's two components (services and other health systems) are designed to create better conditions for and increase the availability and use of high-impact health services, products, and practices in 80 target health zones in Kasai Occidental, Kasai Oriental, Katanga, and Sud Kivu Provinces. The project's services, products, and practices cover family planning; maternal, newborn, and child health; nutrition; malaria, and tuberculosis; HIV; and water/sanitation/hygiene in the target health zones.

USAID | DELIVER PROJECT, Task Order 7

This document was prepared by staff of the USAID | DELIVER PROJECT, Task Order 7, which is funded by USAID under contract number GPO-I-00-06-0007-00, order number AID-OAA-TO-11-00012, beginning on March 28, 2011. Task Order 7 is implemented by John Snow, Inc., in collaboration with 3i Infotech, Inc.; Crown Agents USA, Inc.; FHI 360; Foundation for Innovative New Diagnostics; Logenix International, LLC; The Manoff Group, Inc.; MEBS Global Reach, LC; PATH; PHD International (a division of the RTT Group); Population Services International; Social Sectors Development Strategies, Inc.; UPS Supply Chain Solutions, Inc.; and VillageReach. Task Order 7 supports USAID's goal of reducing the malaria burden in sub-Saharan Africa by procuring and delivering safe, effective, and high-quality malaria commodities; by providing technical assistance and on-the-ground logistics expertise to strengthen in-country supply systems and build capacity for managing commodities; and by improving the global supply and long-term availability of malaria commodities.

Recommended citation

DRC LMIS Assessment (Draft). 2014. Submitted to USAID by the SIAPS, SCMS, IHP, and USAID | DELIVER PROJECT programs. Arlington, VA: Management Sciences for Health.

Supply Chain Management System
Partnership for Supply Chain Management
Management Sciences for Health
1616 North Ft. Myer Drive, 12th floor
Arlington, VA 22209 USA
Telephone: 571.227.8600 / Fax: 571.227.8601
Website: <http://pfscm.org/pfscm>

CONTENTS

Acronyms and Abbreviations	iv
Acknowledgments.....	vi
Executive Summary	vii ^{viii}
Background.....	1
Objectives of the Short-Term Technical Assistance.....	3
Assessment Methodology	4
Desktop Review	4
Meetings and Field Visits.....	8
DRC Supply Chain and Data Flow.....	14
Supply Chain.....	14
Data Flow	16
Key Findings from the Field Visits.....	17
Provincial Health Directorate (DPS, n = 3).....	17
Regional Distribution Center (CDR, n = 3)	17
Health Zone Central Office (BCZS, n = 9).....	18
Health Facilities (FOSAs, n = 16).....	19
Ministry of Health Plan.....	22
Use of mHealth Solutions to Strengthen Data Availability in DRC.....	26
mHealth with DHIS 2 (http://www.dhis2.org/).....	26
mHealth with OptiMaint Mobile (http://www.apisoft.fr)	27
mHealth with Mango/Greenmash (http://greenmash.com/products/mango/sms-mobile/)	27
mHealth with FrontlineSMS (http://www.frontlinesms.com/)	28
mHealth Recommendations	28
Recommendations.....	30
Short-Term Recommendations	31
Mid- to Long-Term Recommendations.....	37
Annex A. Visiting Teams	41
Annex B. Facilities Visited.....	42
Annex C. Questionnaires Used during the Field Visits	43
Annex D. List of People Met or Consulted.....	48
Annex E. Sample List of Reports to be Submitted by Health Facilities.....	49
Annex F. Reference Hospital and Health Center List of Tracer Medicines	50
Annex G. Commodities to be Reported on Under DHIS 2, Referral Hospital, and Health-Zone Levels.....	51
Annex H. Commodities to be Reported on under DHIS 2, Health-Center Level.....	53

ACRONYMS AND ABBREVIATIONS

ACT	artemisinin-based combination therapy
ARV	antiretroviral
ASRAMES	<i>Association Régionale pour l'Approvisionnement en Médicaments Essentiels</i>
BCAF	<i>Bureau de Coordination des Achats</i>
BCZS	<i>Bureau Central de la Zone de Santé</i>
CAG	<i>Cellule d'Appui à la Gestion</i>
CAMELU	<i>Centrale d'Achat des Médicaments Essentiels de Lubumbashi</i>
CAMESKIN	<i>Centrale d'Achat des Médicaments Essentiels de Kinshasa</i>
CDC	US Centers for Disease Control and Prevention
CDR	<i>Centrale de Distribution Régionale</i>
DFID	UK Department for International Development
DHIS	District Health Information System
DPM	<i>Direction de la Pharmacie et du Médicament</i>
DPS	<i>Direction Provinciale de la Santé</i>
DRC	Democratic Republic of Congo
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
FEDECAME	<i>Fédération des Centrales d'Approvisionnement en Médicaments Essentiels</i>
FOSA	<i>formation sanitaire</i>
GESIS	<i>Gestion du Système d'Information Sanitaire</i>
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HGR	<i>Hôpital Général de Référence</i>
HIV	human immunodeficiency virus
ICAP	International Center for AIDS Care Treatment Programs
IP	implementing partner
LMIS	logistics management information system
M&E	monitoring and evaluation
mHealth	mobile health
MNCH	maternal, newborn, and child health
MoH	Ministry of Health
MSH	Management Sciences for Health
PEPFAR	President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative
PMI-EP	President's Malaria Initiative-Expansion Program
PNAM	<i>Programme National d'Approvisionnement en Médicaments Essentiels</i>
PROSANI	<i>Projet de Santé Intégré</i>
PROVIC	<i>Programme de VIH Intégré en République Démocratique du Congo</i>
PSI	Population Services International
RUMER	<i>Registre d'Utilisation des Médicaments Essentiels et des Recettes</i>
SANRU	<i>Santé Rurale</i>
SCMS	Supply Chain Management Systems

Acronyms and Abbreviations

SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SNIS	<i>Système National d'Information Sanitaire</i>
STTA	short-term technical assistance
TB	tuberculosis
USAID	US Agency for International Development
USG	US Government
WHO	World Health Organization

ACKNOWLEDGMENTS

The three advisers of the short-term technical assistance (STTA) team, supported by Supply Chain Management Systems (SCMS), Systems for Improved Access to Pharmaceutical and Services (SIAPS), and the USAID | DELIVER PROJECT, gratefully acknowledge the support, guidance and comments given by all persons contacted and met during each phase of the logistics management information system assessment, from its preparation to its execution and the completion of this report. The information provided was critical for the team to gain an insight into the Democratic Republic of Congo (DRC) supply chain for essential medicines and other commodities and its supporting systems. This includes managers from the various department of the Ministry of Health (MoH), the Kinshasa US Agency for International Development Mission, all the US Government–supported implementing partners, and other organizations that are providing support to the MoH.

In addition, the team extends its special thanks to the staff of the MoH and projects implemented by Management Sciences for Health (MSH) who accompanied the team during its field visits and to the provincial health personnel who provided key information. Without their contribution and support this assessment could not have been conducted.

Finally, special acknowledgements are also due to the MSH Country Operation Management Unit team in DRC for providing administrative and logistic support to ensure that this STTA was executed as planned without any obstacle.

EXECUTIVE SUMMARY

The goal of the Ministry of Health (MoH) in the Democratic Republic of Congo (DRC) is to implement a comprehensive logistics management information system (LMIS) for all essential medicines and other commodities to provide timely information for decision making. To support this goal, the MoH has developed, in consultation with its partners, an LMIS framework, which includes a standard set of data collection forms, together with a set of performance indicators, to monitor the status of the country's supply chain at all levels. However, progress in implementing this LMIS framework has been slow, though a reporting mechanism for the essential medicines program (known as SNIS-Med) has been developed and implemented at selected pilot sites with mixed results.

The national/central level does not have access to stock status or consumption data from the periphery from the various facilities (regional warehouses, health zones, hospitals, health centers). Stock status data may be available at the CDR (*Centrale de Distribution Régionale*) level, but little or no visibility of stock data exists into the lower zonal or facility levels. Without consumption information or regular reporting from the various levels, only limited data are available for demand planning and to monitor commodity distribution and use. Even when data are available, no evidence indicates such data are used for decision making.

A three-person team, each supported by one of the following US Government (USG) implementing partners (IPs)—Supply Chain Management Systems (SCMS), Systems for Improved Access to Pharmaceutical and Services (SIAPS), and the US Agency for International Development | DELIVER PROJECT—led this assessment in collaboration with staff from the MoH and local staff from SIAPS and SCMS DRC field offices.

Key Findings

In general, logistics data are routinely captured at the health facilities on paper-based forms (e.g., *Registre d'Utilisation des Médicaments Essentiels et des Recettes*, known as RUMER, stock cards, or both) and then aggregated onto several additional forms or reports (e.g., SNIS-Med report, National Malaria Control Program report, etc.) for submission to the health zone, the next level above. Only a small number of the visited health facilities are using a spreadsheet or the Mango system (a mobile health-based reporting system for facilities supported by the President's Malaria Initiative-Expansion Program). At the facility level, there is no reliable LMIS, and the team identified data availability, data visibility (including reporting timeliness), and accuracy as the main challenges. At the provincial level, most of the CDRs are computerized, using the Apisoft system, an integrated database system used to manage procurement, storage, and distribution, or an MS Excel spreadsheet. In some cases the provincial health directorates are using the GESIS (*Gestion du Système d'Information Sanitaire*) health management information system. In a nutshell, systems and reporting practices are not harmonized.

At the national level, information is not provided to SCMS or the President's Malaria Initiative (PMI) in a timely fashion once goods are directly delivered to the IPs and then distributed through the various channels identified to monitor availability and support forecasting and demand planning.

Other challenges were identified by the team during its field visits, such as poor record-keeping practices and data control mechanisms, weak feedback and supervision practices, and poor infrastructure (electricity, water, storage conditions).

Although some efforts have reportedly been made to improve the situation, the team expressed concern that the current environment does not provide fertile ground for the implementation of a comprehensive LMIS. As such, the team took a very conservative approach in developing its recommendations and proposing the way forward.

The MoH is in the process of implementing the District Health Information System (DHIS) 2, a fully integrated, web-based health management information system, to capture selected data that can be used to monitor predefined health indicators. It is not a transactional system; however, in DRC it has been customized to record the following seven key data elements identified by the MoH to monitor essential medicines availability and use (*those in italics are already monitored by SCMS with input from other US Agency for International Development [USAID] IPs*):

- *Quantity on hand at the start of the month*
- *Quantity received*
- *Quantity issued but not used (adjustments)*
- *Quantity used*
- *Usable stock on hand at the end of the month*
- Number of days out of stock
- Quantity soon to expire

The current plan is to first collect data for only a limited number of tracer medicines (38), but the list is expected to eventually include most of the commodities supplied through the CDRs. The first DHIS 2 training took place in January 2014, and the schedule for rollout in five provinces is under development. The implementation of DHIS 2 is expected to be done in a gradual manner to create a proof of concept before undertaking an extensive rollout.

Summary of Recommendations

These recommendations are expected to be supported by the relevant IPs to support the USG and DRC MoH.

Short-Term Recommendations

At the central/national level, the visibility of stock variation that occurs as the result of transactions taking place at the lowest level is poor. This hinders the monitoring of stock

availability as well as quantification and demand planning. Therefore, the following is recommended:

- Reporting of key data elements, such as those that have been included in the DHIS 2, should be mandatory for all IPs.
- An electronic monitoring system should be implemented that will allow capture of all transactions related to the procurement and distribution of products provided through USG mechanisms.

At the peripheral level, an interim approach should be considered while the MoH LMIS framework implementation is in progress, by implementing the following recommendations.

- Support the implementation of DHIS 2 in Katanga Province.
- Extrapolate from the consumption data collected from the sites in the DHIS 2 pilot provinces to estimate consumption and support quantification and demand planning activities for the country as a whole.
- Analyze the data from the current list of products monitored.
- Adhere to planned paper-based LMIS forms compatible with the DHIS 2.
- Make data collection a “top-down” system, giving central-level IP staff responsibility for the collection of key logistics data from those structures and facilities that receive their products.
- Ensure that data collection reflects the actual distribution channels used.
- Collect and monitor any data that already exist whenever and wherever they are available.
- Collect and monitor DHIS 2 data as soon as they become available.
- Move toward full integration with the national system.
- Implement use of a mobile health (mHealth) system in a very gradual and conservative manner, making staff accountable for use of the equipment supplied (e.g., smartphone, tablet).

The preceding recommendations apply directly to a paper-based, electronic, or mHealth data collection system, depending largely on available infrastructure. The DHIS 2 mobile module is the preferred mHealth solution; however, other solutions could be considered, providing that they can interface with DHIS 2 and match agreed user requirements.

Mid- to Long-Term Recommendations

- Ensure that the monitoring and evaluation (M&E) tools used by the IPs are aligned with the MoH LMIS framework.
- Standardize the description of all medicines and commodities across all forms and systems.
- Review and reduce the number of recommended forms to be completed at each level.
- Harmonize the supervision program and schedule with the MoH; include MoH staff (central, DPS, zone) in supervision visits, and share reports, information, and data with the MoH.
- Use MoH distribution channels whenever feasible.
- Support the role or implementation of the CDRs where the IPs are present.
- Computerize the PROSANI (*Projet de Santé Intégré*) warehouse in Kinshasa.
- Support commodity management and M&E capacity development of staff at all levels.
- Support a national quantification exercise for ARVs and related commodities.
- Create an inclusive IPs/MoH forum to share data information related to the management of the supply chain.

The IPs can play a key role by supporting the implementation of DHIS 2 in the provinces where they are active, thus providing a unique opportunity for the USG and its partners to support the National LMIS Framework.

These recommendations imply major investments (time, equipment, and money) that could not be quantified at this stage, as well as major changes in the way the various stakeholders are currently operating. Resistance to change must be anticipated. To gain buy-in to support these recommendations and develop a quantifiable set of activities, consultative meetings among the implicated IPs are needed to discuss these recommendations, clarify roles and responsibilities, and agree on the way forward.

BACKGROUND

The Democratic Republic of Congo has 515 health zones with 393 hospitals and 8,266 lower-level health facilities in 11 provinces. Each health zone, often used as the planning and programming unit of the health sector in DRC, has approximately 100,000 to 150,000 inhabitants with 15 to 20 health centers. Some health zones are supplied with commodities through an IP's parallel distribution system. At the central level, others are supplied via two agencies of the *Fédération des Centrales d'Approvisionnement en Médicaments Essentiels* (FEDECAME)—the *Bureau de Coordination des Achats* (BCAF) in Kinshasa and the *Association Régionale pour l'Approvisionnement en Médicaments Essentiels* (ASRAMES) in Goma—that supply the CDRs based in all provinces.

An LMIS framework has been developed in DRC but has not yet been implemented. An embryonic pharmaceutical management information system, called SNIS-Med, is presently in an early design phase. In addition, indicators for monitoring performance and for data collection at each level of the country's supply chain, as well as the tools to be used for data reporting, have been developed.

Critical to this effort is the Ministry of Health, which provides leadership in the health sector; all partners are expected to support the MoH and its integration efforts. The goal of the MoH is to develop a comprehensive system that supports monitoring of the availability and use of all essential medicines and other commodities. Although plans have been developed and the SNIS-Med reporting mechanism implemented at selected pilot sites (without much success), the central-level government currently does not receive any national summaries of stock status or consumption data from the periphery of the national health system. Stock status data may be available at CDR level, but the data rarely filter down to the lower levels. Without consumption information or regular reporting from health zone level, limited data are available to monitor commodity distribution and use. In addition, no uniform and consistent distribution system is in place. Some—but not all—CDRs have vehicles available for distribution, and many health zones do not have funds to pick up their commodities. Furthermore, not all health zones and health facilities are routinely accessible by road.

The USG has five USAID IPs that provide supply chain services at different levels of the health system: USAID | DELIVER PROJECT, Integrated Health Project or *Projet de Santé Intégré* (PROSANI), PMI-Expansion Project (PMI-EP), Supply Chain Management Systems (SCMS), and Systems for Improved Access to Pharmaceutical and Services (SIAPS). With the exception of SIAPS, all partners have been charged with procurement of USG-funded health commodities and delivery to the CDRs and other intermediary points in the supply chain.

The bilateral PROSANI (covering 80 supported health zones) and the PMI-EP (covering 44 health zones in the first year) are charged with ensuring those commodities reach health facilities and, in turn, users. While SCMS and USAID | DELIVER are responsible for supplying selected President's Emergency Plan for AIDS Relief (PEPFAR) and PMI commodities to the IPs, SIAPS provides technical assistance at national and provincial levels with logistics management systems, commodity reporting, quantification, and distribution. However, the limitations of the

nascent logistics system and lack of available data for decision making, combined with unclear commodity distribution systems, hamper quantification and put these multiple USAID-funded commodities at risk of expiry at intermediary levels of the system and put facilities at risk of stock-outs.

Additionally, a harmonized logistics management system needs to be implemented for PEPFAR, PMI, family planning and reproductive health, and tuberculosis (TB) commodities as well as other general essential medicines funded by the USG, to streamline the data collection process, optimize analysis and reporting mechanisms, and eventually support MoH efforts.

These preliminary findings indicate an urgent need to conduct a comprehensive assessment of existing, or planned, logistics management systems and to determine whether existing systems can be built upon, or interface among each other, or if alternatively an interim logistics information system is required to support management and monitoring of commodities supplied through the USG projects in line with the national LMIS framework and that may ultimately be absorbed into the national SNIS-Med system.

OBJECTIVES OF THE SHORT-TERM TECHNICAL ASSISTANCE

The purpose of this short-term technical assistance (STTA), which was conducted jointly by representatives from USAID | DELIVER PROJECT, PROSANI, SCMS, and SIAPS, was to examine the existing national and USG LMISs, and on the basis of the analysis, propose a way forward to address commodity supply and data visibility challenges in DRC. Possibilities include the design or redesign of a common USG LMIS system to ensure that the supply chain of USAID-supported commodities is managed and monitored in a timely and efficient manner to avert both expiries and stock-outs. Recommendations should also be in line with the national LMIS framework. The following tasks were identified:

- Conducting a desktop review of relevant available documents and reports
- Assessing and documenting the performance of current commodity reporting and reordering mechanisms, systems and procedures for essential medicines and priority health program commodities including malaria, HIV, family planning, and maternal, newborn and child health (MNCH), including reporting rates, accuracy of inventory control, and consumption or issues data
- Reviewing progress of the design and implementation of the national LMIS framework, SNIS-Med, USG LMIS designs, and any relevant pilot implementation in country and describing any existing design, major challenges, and any data sources currently available for decision making
- Examining current malaria, HIV, family planning, and MNCH program commodity stocks and commodity flow in country and proposing methods and rationale for redistribution to avert stock-outs and expiries, leveraging synergies of USG programs where possible
- Developing recommendations to ensure available, quality data and reliable resupply mechanisms to
 - Improve the accuracy and timeliness of reported data for the USG-supported programs
 - Improve the ability of the USG resupply systems to deliver commodities to health facility level in a timely manner and to reduce stock-outs, expiries, and waste
 - Leverage synergies of USG-supported programs where possible
- Developing an agreement on data elements that need to be captured, key performance indicators, reporting format, and schedule
- Developing a strategy to incorporate the recommended system into the national LMIS framework, if required

ASSESSMENT METHODOLOGY

This STTA was conducted between November 11 and 26, 2013, in DRC.

The six-person team, as initially proposed and for which the scope of work was initially developed, was reduced to a three-person team. This change reduced the team's ability to address all tasks identified in the original scope of work, such as verifying stock availability for all USG-supported commodities and recommending potential actions for redistributing, transferring, or pushing these commodities throughout the supply chain.

The methodology used for this assessment included conducting a desktop review, meeting with key stakeholders at the national level, and making field visits to the mid and peripheral levels in 2 of the 11 provinces: Kasai Oriental and Katanga. The team composition is provided in Annex A and the list of the facilities visited is in Annex B.

Desktop Review

The “Summary Report of the Preliminary Consensus Workshop on the Implementation of Logistic Management Information System”¹ was the only LMIS-specific document that was submitted for review prior to the team visit. This workshop was held in Kinshasa (April 15–21, 2013) and attended by various representatives from several departments and levels of the MoH, SCMS, and SIAPS. The overall objective of this workshop was to “contribute to the implementation of a logistics management information system.” This report was still in a draft format; however, it provides a detailed description of 18 priority indicators recommended for supply chain M&E at the national, provincial, and health zone levels. They are intended to cover all aspects of the procurement and storage of medicines and related commodities. They are nonspecific to any national program or donors, or to any IPs, but focus on monitoring hospital and health center tracer drugs, with the objective to eventually include most products. The objectives of these indicators have been defined as follows:

- Provide information on factors that promote stock shortages and overstocks
- Allow the analysis of data collected to prevent stock shortages and overstocks
- Provide timely data to avoid stock shortages and overstocks and to measure the national procurement and storage management systems
- Improve the collaboration and the sharing of information between the various levels of the national supply chain and among the various players
- Reinforce the regular submission of the data and their quality

¹ MoH, *Rapport Synthèse du Pré Atelier de Consensus sur la Mise en Œuvre d'un Système d'Information en Gestion Logistique*, Kinshasa, April 15–21, 2013.

This workshop was also an opportunity to review the forms used by the various health facilities to collect and report data, most of them monthly.

On the basis of the field visit findings, the team concluded that a need exists to reduce the number of forms to ensure that at least the minimum data elements required to monitor the supply chain are captured and reported in a timely manner and that repetition and redundancy in the data being reported are reduced. This should be done in collaboration with the MoH as a follow-up to the LMIS consensus workshop.

A document developed by SCMS, *Summary Report on the Status of Storage Sites Used by the PEPFAR Implementing Partners in DRC*,² which was also shared with the team before departure, provides detailed information on the storage capacity and storage conditions, the efficiency of the management, and the recording practices used by the IPs in all 11 sites that stock and distribute products provided by SCMS. This assessment was done using the Inventory Management Assessment Tool developed by MSH. The recommendations focus on the IPs, SCMS, PEPFAR, USAID, and the US Centers for Disease Control and Prevention (CDC) and address issues of equipment (e.g., racking, thermometer), systems (e.g., stock cards), infrastructure (e.g., cold room, warehouse in box), and integration into the national supply chain (e.g., use of CDRs).

During its visits to the CDRs, the team was able to identify and validate the same concerns that were raised in this SCMS report.

The mapping of the procurement and distribution systems for medicines and other health products in DRC³ is part of a series of assessments that have been conducted by the World Health Organization (WHO) in many francophone countries. This assessment was completed in 2009 and provides a comprehensive analysis of the supply chain in DRC for all essential medicines, antiretrovirals (ARVs), and medicines used for the treatment of TB, malaria, and opportunistic infections; vaccines; all family planning products; blood safety products; and HIV tests. It includes the identification of all stakeholders, the players and their roles, the structures involved in the supply chain, the procurement and distribution network(s), and the strengths and the weaknesses of the supply chain. To say that the supply chain in DRC is complex is an understatement. Its graphical representation provided in this report (figure 1), known as the spiderweb in DRC, is self-explanatory and emphasizes the lack of coordination and integration among stakeholders in the system.

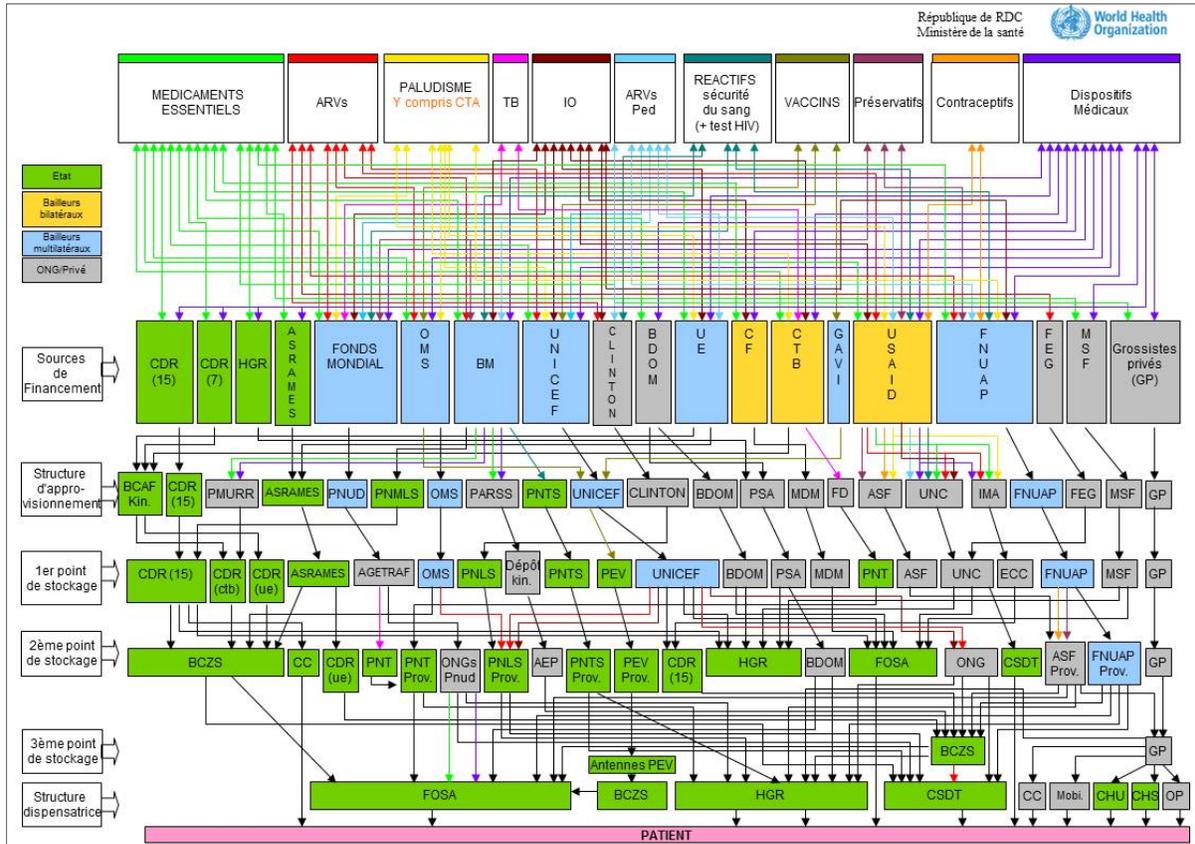
This diagram also shows high dependency of the DRC Government on support from external stakeholders (the state structures are represented in green). In 2009, the supply chain in DRC involved 19 procurement agencies and 99 distribution networks operated by 52 different partners. The need to simplify the system through better collaboration and coordination,

² SCMS, *Rapport synthèse de l'état de lieux des sites de stockage des Partenaires de Mise en Œuvre PEPFAR RDC*, October 2013.

³ WHO/PNAM, *Cartographie des Systèmes d'Approvisionnement et de Distribution des Médicaments et Autres Produits de Santé en RDC*, June 2009.

improvement of quantification practices, and compliance with the pharmaceutical regulation and legislation are the three main recommendations that are identified in this report.

As observed by the team, not much has changed since this 2009 study was conducted; many of the issues identified are not only system issues but also managerial and governance issues.



Source: WHO/PNAM, *Cartographie des Systèmes d'Approvisionnement et de Distribution des Médicaments et Autres Produits de Santé en RDC*, June 2009

Figure 1. Pharmaceutical products supply chain in DRC, 2009

The *Summary Report on the Assessment of the Storage and Management Capacities of the CDRs and Other Warehouses*,⁴ developed for the Rural Health project (*Projet de Santé Rurale*, or SANRU), complements the SCMS report because it looks at peripheral warehousing structures (CDRs, private warehouses, and referral hospital stores) dealing with essential medicines and other commodities throughout the country. More specifically, this report summarizes the storage and distribution capacity, infrastructure, human resources, management, and ability to provide information for decision making. It was reported that all the CDRs that are using an electronic

⁴ J-P. Lelo, F. Biayi, D. Ngeleka, *Rapport Synthèse de l'Évaluation des Capacités de Stockage et Gestion des CDR et Dépôts Supplémentaires (SANRU)*, September 2012.

tool (database software or Excel spreadsheet) to manage their stock are able to provide available stock data from their system.

Although data are available from most of the visited CDRs, the team expressed many concerns about their accuracy.

*The Summary of Lessons Learned: Mapping of Procurement and Supply Management (PSM) Bottlenecks in Global Fund Grant Implementation Related to Delays in Grant Disbursement: DRC and Tanzania*⁵ report, which was prepared for the Roll Back Malaria program, focused on the procurement, supply, and distribution aspects of implementation of malaria grants from the Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) in both DRC (Rounds 3, 8, and 10) and Tanzania (Rounds 4, 7, 8, and 9). Overviews of the grant history and implementation, the various bottlenecks and challenges, and a set of recommendations to address them, are identified in this report. For DRC, the main challenges in this 2012 report concur with other reviewed reports, including the 2009 WHO report, and some of the challenges quoted by the IPs and the STTA team:

- Changes of Standard Treatment Guidelines
- Poor coordination among IPs, unsynchronized reporting time (and format) because the grant is implemented with multiple Principal Recipients
- Weak LMIS that has a major impact on forecasting, quantification, distribution, and availability
- Inadequate storage conditions
- Long delivery time from manufacturers
- Customs clearance delays
- Other issues related to distribution

All these are exacerbated by weak policy and regulatory authorities and excessive bureaucracy. The recommendations relevant to this STTA include the need to improve templates used for data collation and report submission, to increase coordination among Principal Recipients and communication between Principal Recipients and manufacturers, to reinforce the use of the DRC supply chain and all supporting systems, and to increase visibility of the stock situation and consumption down to the lowest level.

The review of the documents highlights some of the challenges that DRC is facing in improving the management of the supply chain system and the supporting systems to support access to essential medicines and other commodities at all levels.

⁵ F. Jouberton and C. Adegoke, *Summary of Lesson Learned: Mapping Of Procurement and Supply Management (PSM) Bottlenecks in Global Fund Grant Implementation Related to Delays in Grant Disbursement: DRC and Tanzania*, Roll Back Malaria, August 2012.

Meetings and Field Visits

November 11–12, 2013

The first two days of the STTA were dedicated to discussions with SIAPS and SCMS managers to understand the roles of these two projects and confirm their expectations about this STTA, the current status of implementation of a LMIS, and the program for the rest of the visit.

During the same period a series of meetings was held with the managers of the following MoH departments: *Programme National d'Approvisionnement en Médicaments Essentiels* (PNAM), *Cellule d'Appui à la Gestion* (CAG), FEDECAME, the *Centrale d'Achat des Médicaments Essentiels de Kinshasa* (CAMESKIN), and one of the two Principal Recipients of the Global Fund: the SANRU project.

The draft questionnaires, developed by the team prior to the visit, were presented to the managers of PNAM and CAG. It was eventually agreed to include elements that were collected during the previous evaluations done by the MoH in other provinces. One questionnaire (see Annex C) was developed for each of the relevant structures:

- *Direction Provinciale de la Santé* (DPS)
- *Centrale de Distribution Régionale* (CDR)
- *Bureau Central de la Zone de Santé* (BCZS)
- *Formation sanitaire* (FOSA)—general referral hospitals, referral health centers, health centers, and health posts

These questionnaires targeted health workers who are directly involved in procuring, storing, and dispensing essential medicines at the facility level (CDR, BCZS, FOSA) or providing administrative support (DPS).

Because of the short time available for the field visits and the reduced size of the STTA team, the team split into three groups—one to visit Kasai Oriental Province and two that would go to Katanga Province. The teams were accompanied by local staff from the SCMS and SIAPS projects and from the *Direction de la Pharmacie et du Médicament* (DPM), PNAM, and CAG. Katanga Province was an obvious choice because all IPs are present; in Kasai Oriental Province, only PROSANI is present, and therefore it was also an opportunity to assess a province that gets less support.

The objectives of this STTA were also presented to the Secretary General for Health. He felt that this STTA was very timely to support the MoH's effort to strengthen the LMIS, and he gave his approval for the team to go to the provinces.

On November 12, 2013, a web presentation of the Mango® system took place at the MSH office, attended by the MoH staff and two PMI-EP advisers. Population Services International (PSI) has subcontracted a United Kingdom–based service provider, Greenmash, to implement this web-based system (Mango) that is used at the facility level to routinely capture and report data on stock on hand to support the M&E component for PMI-EP. Although the system can provide all

required data elements to monitor the PMI-EP program and the limited number of commodities used for the malaria program, it is a sophisticated operational research tool and would not be a suitable LMIS to capture routine data for an extensive list of essential medicines (see mHealth section of this report). There is, however, an opportunity to extract the PMI data into an LMIS. This was discussed further with the PMI-EP team.

November 13–20, 2013

The team flew to Mbuji Mayi and Lubumbashi and, using the revised questionnaires, interviewed MoH staff from 31 facilities distributed as shown in table 1.

Table 1. Distribution of Facilities

Type of facility	Number of facilities, Kasai Oriental	Number of facilities, Katanga	Total facilities by type
DPS	1	2	3
CDR	1	2	3
BCZS	4	5	9
FOSA	7	9	16
Total	13	18	31

The team was joined by one of the PMI-EP technical advisers from PSI during the last two days of the visit in Lubumbashi. While in Lubumbashi, the team also had the opportunity to meet the SIAPS and USAID | DELIVER activity manager for USAID and to have a mid-STTA debriefing.

November 21–26, 2013

All teams flew back to Kinshasa to compile and analyze the data collected during the site visits.

Meetings were also held with the four IPs that are receiving ARVs and other supplies from SCMS: Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), International Center for AIDS Care Treatment Programs (ICAP), *Programme de VIH Intégré en République Démocratique du Congo* (PROVIC), and PROSANI.

They were all asked the following questions:

- Which products are you managing?
- Who are your “clients”?
- Give us a short description of your supply chain from supplier(s) to facilities.
- What are the data elements that you collect and which indicators are you monitoring?
- What are the missing data elements and indicators that you would like to monitor?
- What challenges are you experiencing in supporting the supply chain at all levels?

Their responses are summarized in table 2.

Table 2. IP Response Summary

Project name/IP (funding agency)	PROVIC/PATH (USAID)	PROSANI/MSH (USAID)	PMI-EP/PSI (USAID)	EGPAF (CDC)	ICAP (CDC)
Managed products	ARVs (adult and pediatric), co-trimoxazole, Ols, folic acid, mebendazole, paracetamol, ORS, all family planning products, disinfectant (e.g., alcohol, chlorine), lab reagents and tests (including HIV, syphilis), about 70 products	Essential medicines including antimalarials, PMTCT and TB medicines, all family planning products, ARVs, HIV tests, and other related products	Sulfadoxine-pyrimethamine, bednets, rapid diagnostic tests, ASAQ, quinine kits, artesunate suppository	PMTCT and B+ products, all family planning products, lab reagents and tests, about 85 products	ARVs (adult and pediatric), ophthalmic products, all family planning products, lab reagents and tests (including HIV, syphilis), medical supplies
"Clients"	Health facilities, through regional depots and HZs; Have their own mobile clinics	Health facilities (1,425), through 8 CDRs and 80 HZs (70 PMI supported and 10 through Global Fund for malaria)	Health facilities spread over 40 HZs	Health facilities (185 in Kinshasa, 16 in Province Orientale, 36 in Katanga), that are contracted through HZs, using a "hub and spoke" within the HZs	Health facilities (161 in Kinshasa, 92 in Katanga) and follows cohort of patients
Short description of supply chain from supplier(s) to facilities	<ul style="list-style-type: none"> • Get most of their supply from SCMS. Use regional depots, which then supply health facilities • Service level: <ul style="list-style-type: none"> ○ Try to maintain 3 months' buffer stock. ○ Orders are placed monthly in Kinshasa, and every 4 months in other provinces. Use emergency orders when required. ○ use push system for family planning and pull for other products. 	<ul style="list-style-type: none"> • HIV commodities: In the past got their HIV-related commodities from SCMS, which were temporarily kept in a warehouse in Kinshasa then shipped to the CDRs in the 2 Kasai and delivered to Bukavu CDR. For Katanga (i.e., current situation) they are delivered to the IHP office in Lubumbashi that is responsible for shipping then to CDRs in Kamina and Kolwezi. • Family planning commodities: Stored in a Kinshasa warehouse from 	<ul style="list-style-type: none"> • A central mechanism purchases commodities and ships them directly to regional warehouses. • From there, the project PMI-EP supports their transportation to health zones, health facilities, and community health sites. 	<ul style="list-style-type: none"> • Gets most of their supply from SCMS. • Uses its own warehouse, then supplies transit through the health zones to their HUBs who service their health facilities. • Provided starting stock now requisition-based/pull system. • Do not provide more than 90 days' supplies. • Try to maintain a 1 month buffer stock. • Use a pull system. 	<ul style="list-style-type: none"> • Now get most of their supply from SCMS, but get Global Fund ARVs. • Have a small depot but use PROSANI/MSH store and plan to use the regional depot. • Every 3 months requests are placed by health facilities. • Use emergency orders when required. • Try to maintain a 6 months' buffer stock. • Use a pull system.

Assessment Methodology

Project name/IP (funding agency)	PROVIC/PATH (USAID)	PROSANI/MSH (USAID)	PMI-EP/PSI (USAID)	EGPAF (CDC)	ICAP (CDC)
		<p>where shipments are prepared according to needs and sent to CDRs twice a year.</p> <ul style="list-style-type: none"> Essential medicines and malaria commodities: The suppliers ship directly to CDRs. All IHP pharmaceutical commodities managed by the contracted CDRs: CDRs supply their HZ clients using a requisition-based system (pull or push system for some products). IHP pays for the distribution costs of the pharmaceutical commodities from CDRs to HZs and health facilities. 			
Data elements that you collect and indicators that you are monitoring	<ul style="list-style-type: none"> Stock, receipt, usage, expiry date Data captured on a laptop using Excel spreadsheet Data then submitted via modem every month for all products Monitor PEPFAR indicators 	MNCH, PEPFAR, PMI, TB, nutrition commodities supply chain management-related data and indicators	Monitor indicators related to the management and treatment of malaria (including stock-outs of RDTs and ACTs)	<ul style="list-style-type: none"> Starting stock, receipts, usage, end stock, number of days out-of-stock No particular indicators Limited list of products 	PEPFAR indicators (average monthly consumption vs. number of tests)
Missing data elements and indicators that you would like to monitor	Not applicable	Consumption data from health facilities, commodities at risk to expire		Would like to include all products, batch number and expiry dates, issues, and develop their own indicators	Consumption data from health facilities, ready to expire

Project name/IP (funding agency)	PROVIC/PATH (USAID)	PROSANI/MSH (USAID)	PMI-EP/PSI (USAID)	EGPAF (CDC)	ICAP (CDC)
Challenges experienced in supporting the supply chain at all levels	<ul style="list-style-type: none"> • Theft of stock at airport that led to stock-out • Quality of data and timeliness of reports • Lengthy customs clearance process, which causes items to have short shelf life by the time they are available for distribution • Variability in timeliness of reports 	Delay with customs clearance, expensive air shipment, bad roads, thefts of stock at airport	<ul style="list-style-type: none"> • Stock-outs for some commodities (SP, long-lasting insecticide-treated bednets, severe malaria kits ...) • since inception of the project • Commodity procurement managed by another partner, a central mechanism making it difficult to control product availability • Logistics: bad roads, natural barriers... 	<ul style="list-style-type: none"> • DRC is a large country. • Energy supply unreliable • Unclear redistribution mechanism. • Lengthy customs clearance • Don't get information from site level 	<ul style="list-style-type: none"> • Energy supply unreliable • Need a lot of energy to implement a system • Data quality • Poor MoH staff commitment • Training • Misuse of products (e.g., HIV test, co-trimoxazole) • Funding is out of synch with implementation • Supply planning difficult because of weak quantification

Note: ACT = artemisinin-based combination therapy, ASAQ = artesunate/amodiaquine, HZ = health zone, IHP = Integrated Health Project, OI = opportunistic infection, ORS = oral rehydration solution, PMTCT = prevention of mother-to-child transmission, RDT = rapid diagnostic test.

Table 3 highlights the distribution of the PEPFAR-supported IPs across all provinces. Katanga is the only one where all IPs are supporting sites.

Table 3. Distribution of PEPFAR IPs Supporting the DRC Supply Chain

Implementing Partner	Kinshasa	Katanga	Sud Kivu	Kasai Oriental	Kasai Occidental	Province Orientale
SCMS/MSH (funded by PEPFAR/USAID)	X	X				X
PROSANI/MSH (funded by PEPFAR/USAID)		X	X	X	X	
PROVIC/PATH (funded by PEPFAR/USAID)	X	X				X
PMI-EP/PSI (funded by PMI/USAID)		X	X	X	X	
EGPAF (funded by CDC)	X	X				X
ICAP (funded by CDC)	X	X				

DRC SUPPLY CHAIN AND DATA FLOW

Supply Chain

As indicated in the previous section, the supply chain in DRC is complex; however, to focus on the objectives of this STTA, which is to understand the interactions between the MoH and the USG-supported IPs, their roles, the current available system(s) and processes, and the data flow, one has to somehow simplify the representation of the DRC supply chain (see figure 2).

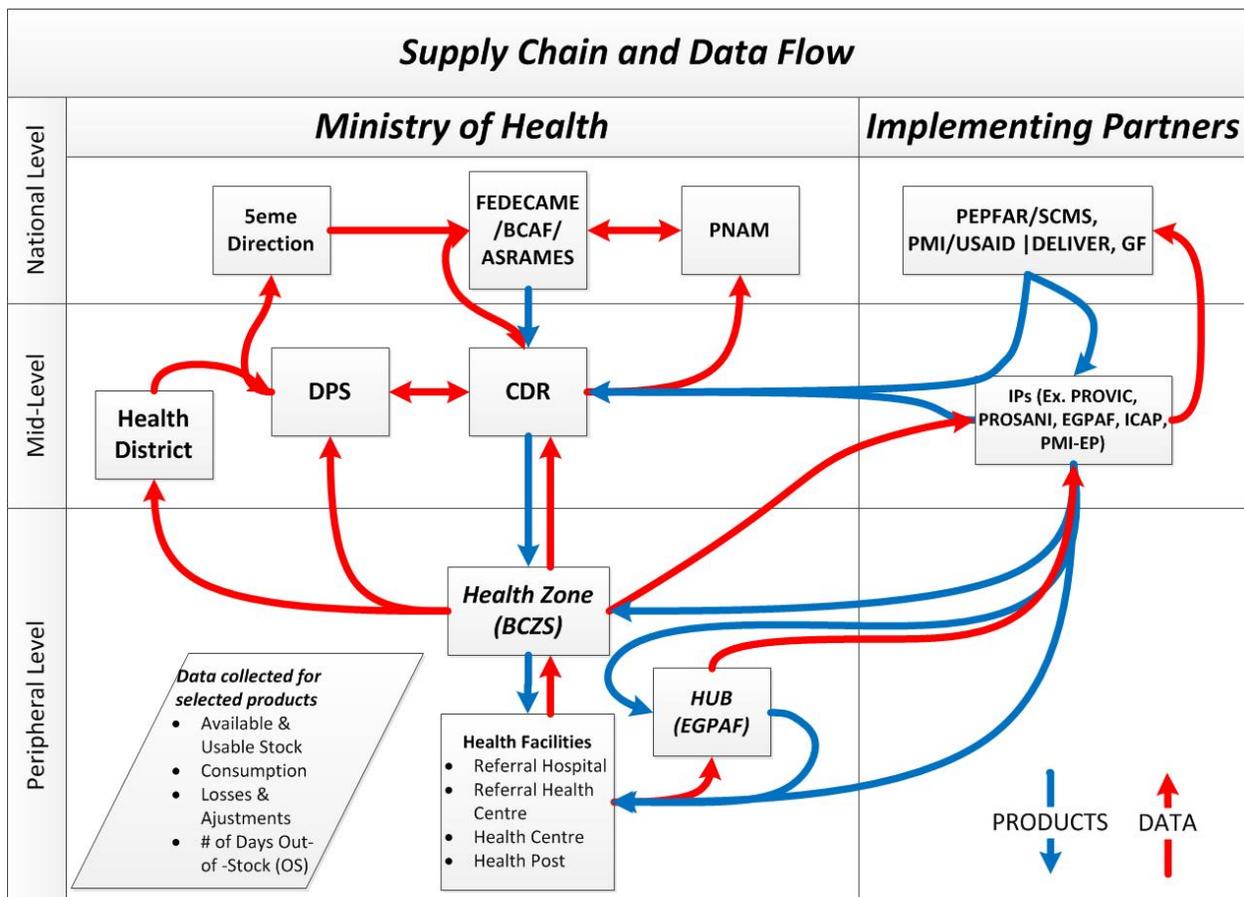


Figure 2. Current supply chain and data flow

National Level

PNAM provides administrative and regulatory support and is expected to play a coordinating and strategic role. FEDECAME, responsible for lobbying and relations with the central government, has two procurement agencies: BCAF in Kinshasa that supports the western provinces and Goma-based ASRAMES that supports the eastern part of the country. They are both responsible for compiling provincial requirements and manage the tenders for the national essential

medicines pool procurement program. The provinces are served according to the following map (figure 3). ASRAMES has been approved as a category “C” wholesaler by the USG, which means ASRAMES can provide select products as approved by USAID to the USG programs.

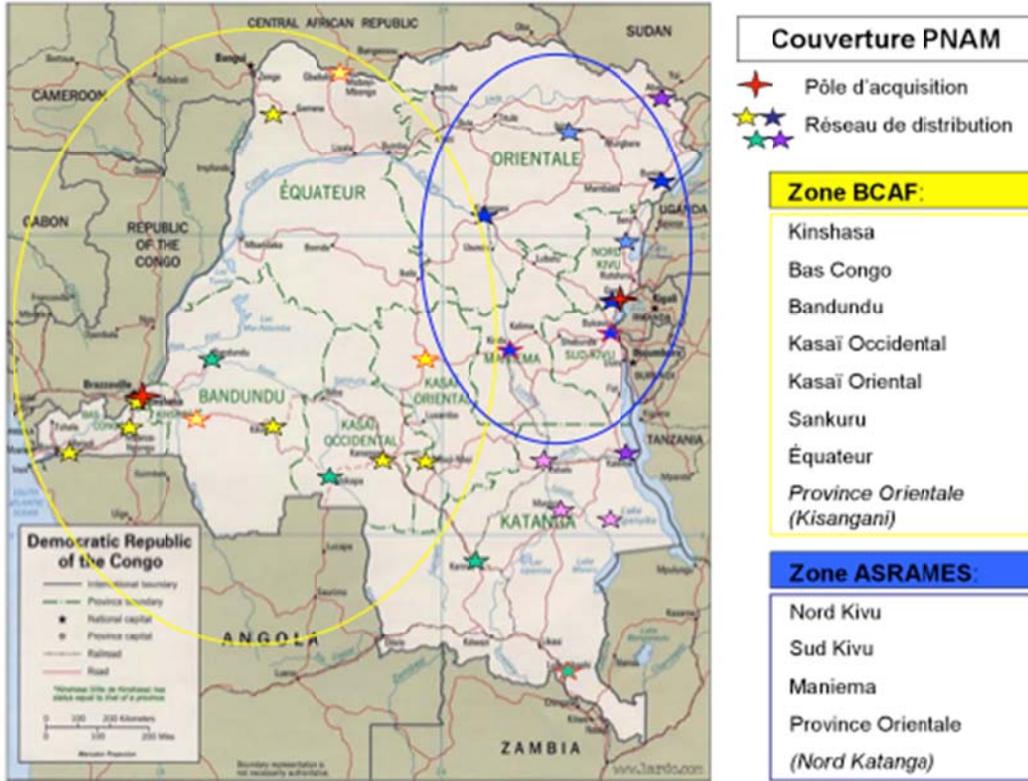


Figure 3. PNAM coverage

A third agency is expected to be established in Lubumbashi to support the southeast part of the country, but its implementation is still pending. The Fifth Direction manages the information compiled at the peripheral level using the *Système National d'Information Sanitaire* (SNIS) data collection tool. SNIS includes various data elements related to service delivery (e.g., patient attendance) and includes a very limited list of essential medicines and other commodities.

At this level the MoH partners are providing funding (PEFAR, Global Fund, PMI) or procuring products (SCMS, USAID | DELIVER) through manufacturers that are located outside DRC. These products are sent directly to the local IPs (for purposes of simplification, this flow is not included in figure 2).

For each of its partners, SCMS tracks stock levels, consumption, and adjustments using a Microsoft Excel spreadsheet that contains the following data elements for each batch:

- Expiry date
- Stock balance from previous month

- Receipts
- Issues
- Adjustments
- Physical stock
- Stock level

SCMS reported that getting these data in timely fashion from the IPs it supplies is a major challenge.

Mid-Level

With the upcoming provincial demarcation, which will increase the number of provinces from 11 to 26, the health districts will no longer exist. Currently they play a management, supervisory, and administrative role like the DPS. At this level the CDR is, in most cases, the first port of entry for products at the provincial level; the CDR assumes the storage and distribution of essential medicines and other commodities. However, not all the CDRs are playing the same role, and they are not all accredited as such. This is the case for the *Centrale d'Achat des Médicaments Essentiels de Lubumbashi* (CAMELU) in Katanga Province, which has only a storage role for PROVIC and SANRU.

Peripheral Level

Service delivery is happening at this level through the FOSAs. These health facilities are grouped in health zones under the authority of the BCZS, including referral hospitals, referral health centers, and health posts, and can be government operated (under the provincial authority), privately owned (e.g., mining companies, faith-based organizations), or supported by the community and managed by volunteers.

Figure 2 shows the flow of products from the national to the peripheral level (in blue). From the national level, products are supposed to move from the procurement agencies (FEDECAME or ASRAMES) and/or the IPs to the CDRs at the mid-level, which then supply the FOSAs through the BCZS. Although one might expect all IPs to support the national supply chain by having all products channeled through the CDRs, this is not always happening. PROSANI and PMI-EP use the CDRs in their four provinces, but EGPAF and ICAP (the CDC-supported IPs) do not use the Kinshasa and Kisangani CDRs, which have no room to store their products. They send their supplies directly to either the BCZS or the FOSAs. ICAP is also using the PROSANI storage facility in Kinshasa and plans to use the CDRs. EGPAF is using what it describes as a “hub (using referral hospitals) and spokes (FOSA)” network when health zone storerooms cannot accommodate its products, therefore bypassing the BCZS.

Data Flow

In figure 2 the data flow (in red) follows the flow of products from the peripheral to the national level, with additional exchange among the various structures at the mid and national levels. The availability, timeliness, and quality of data collected at the lowest level (FOSA) are critical factors to support the decision-making process at all levels.

KEY FINDINGS FROM THE FIELD VISITS

As indicated, the questionnaires used during the site visits (see Annex C) were designed in collaboration with the MoH staff so the teams could gather information to get a better understanding of the supply chain for essential medicines and other commodities at all levels. However, the following observations focus on summarizing the findings relevant to the implementation and support of the LMIS in the various types of structures.

Provincial Health Directorate (DPS, n = 3)

- All three DPSs visited have at least one functional computer and printer, and each of the DPSs has at least three people that have received some computer training.
- All have access to a mobile phone network (through the use of private cell phones).
- Only two DPSs have Internet access.
- Electricity is available, although not all the time, from the national network or a generator.

Regional Distribution Center (CDR, n = 3)

- Unlike the others, the Lubumbashi CDR has only a transit warehouse role for the IPs, storing their supplies, and is not responsible for supply procurement or distribution. PROSANI has a contract for distribution with the Kolwezi and Mbuji-Mayi CDRs.
- None of the CDRs are aware of the items and quantities that can be ordered from the IPs.
- None of them are using the same tool for store management:
 - Kasai Oriental is using the Apisoft system. The Apisoft system is an integrated management system that includes an accounting module. It is currently used by several CDRs. Its implementation is funded by the European Union and United Nations Development Programme. Technical support is available in country. Apisoft is also used for forecasting.
 - Kolwezi is using INSIMED. INSIMED is a Microsoft Access system developed locally, but the team was told that it is not considered as a long-term solution by the MoH.
 - Lubumbashi is using an Excel spreadsheet.
- All CDRs visited have at least one functional computer.
- All have access to mobile phone network (through the use of private cell phones).

- One of the CDRs (Kolwezi) visited does not have Internet access.
- Electricity is available, although not all the time, either from the national network or a generator.
- Although they are not standardized, the CDRs are the only structures that can claim to have an LMIS.

Health Zone Central Office (BCZS, n = 9)

- At least one functional computer and printer were available in seven of the BCZSs.
- Computer training was provided to at least two staff of eight of the BCZSs.
- Microsoft Excel is used to analyze data.
- All BCZS get monthly reports from the FOSAs. Only six get reports that include logistics data on medicines.
- It was reported that all BCZSs submit the SNIS report to the national level; the team was not able to confirm it.
- The BCZSs are expected to analyze the data reported by the FOSAs and provide feedback during the monthly M&E meetings (*réunion de monitoring*), but this is not common practice, and quality of the reported data is questionable.
- None of the BCZSs monitor tracer medicine availability, and only four calculate product availability indicators.
- Only one reported being aware of which products can be made available through the USG IP channel (products and quantity).
- The completeness of the monthly reports submitted by seven of the FOSAs was 100% (5), 86% (1), and 8% (1). The lowest rating (8%) is a reflection of the challenges that the BCZSs are experiencing in getting reports from privately owned FOSAs (e.g., FOSAs supported by the private sector mines), which are not keen on submitting reports. On-time reporting ranged from 60% to 100%.
- All have access to a mobile phone network (seven through the use of their private cell phone).
- Only five have access to the Internet (two through a privately owned modem).
- Electricity is available at all BCZS offices, although not all the time, from the national network (5), generator (6), and/or solar panel (4).

Health Facilities (FOSAs, n = 16)

- Only five of the FOSAs visited have a functional desktop or laptop, and three have a functional printer. Microsoft Excel is used for recording data.
- Staff was trained on the use of personal computers in five FOSAs.
- None of the FOSAs had Internet connectivity.
- Private mobile phones were available in 10 FOSAs.
- Most of the FOSAs are submitting the monthly SNIS report to the BCZS. However, in the case of referral hospitals, the number of reports that they have to submit every month was reportedly as high as 26 (see Annex E). In most cases, additional reports on the HIV, malaria, and vaccination programs are submitted. The reported data can be duplicated across the various reports.
- Each FOSA keeps a register, the RUMER, to record medicines and other product use together with the revenues from sales. Data are expected to be captured as medicines are dispensed. Only nine of the FOSAs had the RUMER up to date.
- Stock cards are also supposed to be kept to record receipts, stock on hand, and issues. The team selected six products at random and checked the recorded stock vs. the physical stock, and their expiry dates. Only nine FOSAs had stock cards, but the quantities recorded and in stock matched in only one FOSA.
- Shortages of blank stock cards were reported. As a result many FOSAs are using flimsy photocopies of the original stock cards. One facility created its own stock card on a sheet of paper.
- When available, stock cards are piled up and unsorted. In most cases it took the visiting team members more than 15 minutes to identify the six stock cards to verify the physical stock vs. recorded stock.
- During some visits, the teams witnessed commodities being issued, sold, or dispensed without being recorded.
- None of the available records allow identification of the source or origin of the products.
- Most of the staff is not aware of the products or quantities they can get from the IPs.
- The shelf life for the products surveyed ranged from 2 to 46 months. Stock-outs have been reported over the last 6 months.
- At this level, expired products are not a major issue because only small quantities are stored, and they have a rapid turnover.

- To support the national LMIS framework, FOSAs are supposed to submit an essential medicines monthly report to the BCZS. It includes the monthly consumption, usable stock balance, losses and adjustments, and number of days out of stock. The team was able to obtain a copy of this report in 12 FOSAs; however, not all the required data was captured.
- The SNIS monthly report is completed by all FOSAs. They are supposed to be shared and discussed during the M&E meetings (*réunion de monitoring*) that are held once a month at the health zone level. However, because basic records like stock cards are not kept up to date, as observed in most FOSAs during the visits, the validity of the data submitted is questionable. Stipends are given to health workers by some IPs (e.g., EGPAF) to ensure that reports are completed and submitted on time. This, however, does not guarantee the quality of the data because it was also reported that “sometimes” these reports are filled in with fictitious data on the way to the monthly M&E meetings.
- FOSAs reported they spend up to four days a month preparing various reports.
- Electricity is very unreliable at this level or not available. In theory power outages are scheduled; however, they do not happen as planned. Power cuts range from 30 minutes to 23 hours per day. One facility reported having overall power only eight months a year. Sources of electricity include the national network (9), generator (6), and solar panels (4), while four of the FOSAs visited do not have electricity.
- IP-supported facilities did not evidence any better management systems than non-IP-supported facilities. SCMS also reported that getting regular reports from the PEPFAR IPs on their supply chain–related activities is a challenge. The PMI-EP reported being able to get stock data for their products using the Greenmash Mango system.

In summary, no reliable LMIS exists. From the health zone down to the FOSAs, with a few exceptions (use of spreadsheet or the Mango system in the case of PMI-EP-supported facilities), the peripheral level is using a set of manual forms to capture data. Poor data availability and accuracy are serious concerns. At the mid-level, most of the CDRs are computerized, using the Apisoft system or a Microsoft Excel spreadsheet, and in some cases the DPSs are using the GESIS health management information system. At this level, there is no evidence that any of these data are used for decision making.

The situation is compounded by the following challenges:

- Scarce, unmotivated, and unskilled workforce
- Reliance on volunteers from the community to provide services
- Poor record-keeping practices and control mechanisms
- No accountability
- Weak feedback and supervision practices
- Lack of standard operating procedures
- Weak information technology support, when available
- Poor infrastructure (electricity, water, storage conditions)
- Long distances and poor road network

- Weak communication network
- Unreliable supply of consumables (forms, printing paper, printer toner, etc.)
- Uncoordinated program implementation

Moreover, stipends provided by some IPs do not guarantee higher-quality data capture and reporting.

All these factors—which do not create a fertile ground for LMIS implementation or routine data collection, analysis, and utilization of any kind—were taken in consideration when the team formulated its recommended way forward.

MINISTRY OF HEALTH PLAN

The MoH in DRC plans to implement a unique and integrated electronic health management information system that allows aggregation of selected data elements to support the management of all health programs. From the health zone up, data will be captured through a web-based interface to monitor activities at each level. All stakeholders will be granted access to selected data and will receive custom reports according to their roles and responsibilities. Figure 4 describes the overall proposed architecture of the system and highlights the data elements that should be submitted for the essential medicines program by the FOSAs to the health zone. The data will be hosted in a national server located in the office of the MoH Secrétariat Général.

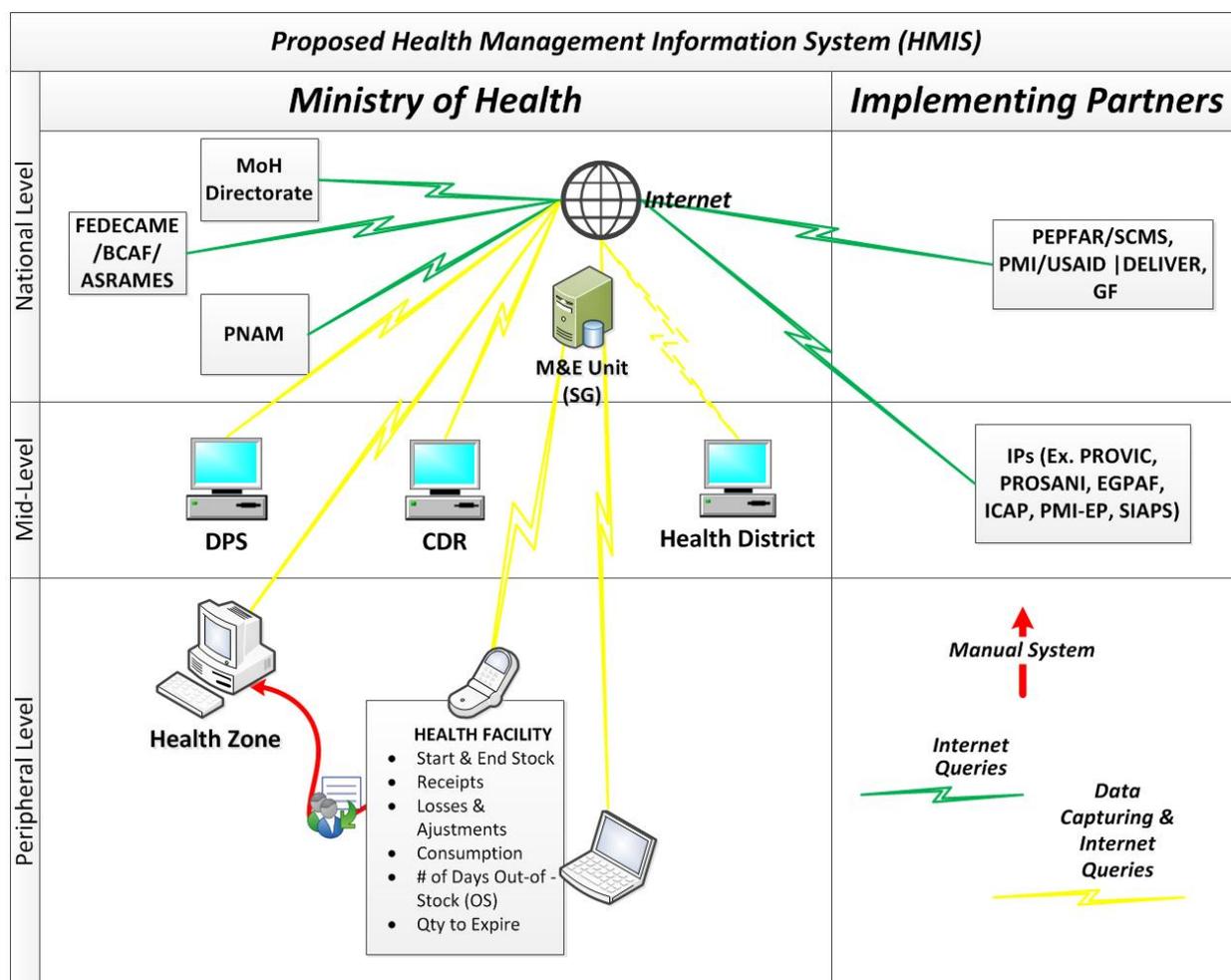


Figure 4. MoH health management information system

The FOSAs will be the primary source of data. Under the proposed system, data will be transmitted to the health zones, where data will be captured and aggregated. Data will be transmitted using paper-based forms to the health zone, or when feasible, smartphones or computers could be used to capture data straight into the health management information system.

The opportunity to transfer data electronically is, currently, largely dependent on the support that can be provided by the IPs (laptop, smartphones) and access to reliable communication networks. Quantities issued from CDRs to the health zones will be captured by the CDRs, and the health zones will then capture the quantities issued to the FOSAs when products are channeled through them.

The DHIS 2 information system has been selected to support this initiative and is expected to be implemented according to the architecture described in figure 4 early in 2014. Funding is provided by the UK Department for International Development (DFID) and the Global Fund, with IMA World Health as the principal implementing partner. A local team has been trained in the customization, maintenance, support, and implementation of DHIS 2, thereby reducing the dependence on external resources.

DHIS 2 was chosen based on the following criteria:

- Web-based integrated system
- Data hosting on local server
- Screens available in French
- Customizable for all health programs
- Ability to interface with other systems
- Avoidance of data-capturing redundancy as the data captured can be made available across several modules
- Free (open source)
- Ability to capture data offline and synchronize afterward
- Mobile interface option that supports mHealth (DHIS 2 supports Android operating system)
- Geographical information system (GIS) functions to support the mapping of services
- Ability to produce user-defined reports and easily export raw data

The successful implementation of DHIS 2 has already been supported by the Global Fund and PEPFAR in other countries (e.g., Ghana, Kenya, Liberia, Malawi, Mozambique, Rwanda, Uganda). DHIS 2 has been used to monitor health sector performance indicators such as availability of tracer medicines.

Initially the DHIS 2 rollout was supposed to start in four provinces (Kinshasa, Kasai Oriental, Province Orientale, and Maniema) and focused on DFID and Global Fund-supported sites. In

2014, the MoH has agreed to add all the health zones supported by USAID and the World Bank; therefore Kantanga Province will be included. As a result, one of the PROSANI team members (Dr. Sam Mbuyama) attended the training-of-trainers workshop that was held in early 2014. The data collection tools have been finalized and approved. The manuals are under development. The rollout planning is expected to be finalized in March 2014.

The list of products to be monitored through the DHIS 2 system has been significantly increased with the intention to eventually include all essential medicines and other commodities. From the current 24 tracer medicines for hospitals and 23 for health centers (see Annex F), the new lists include 91 products for the hospitals and the BCZSs and 51 products for the health centers (see Annexes G and H).

The seven key data elements currently required by the MoH have already been included in the essential medicines module, together with the following additional data elements:

- Quantity on hand at the start of the month
- Quantity received
- Quantity issued but not used (adjustments)
- Quantity used
- Usable stock on hand at the end of the month
- Number of days out stock
- Quantity soon to expire

Some of these elements (e.g., quantity received) could be calculated at a higher level. For example, the quantity received at a specific FOSA should be equal to the quantity issued by the BCZS to this FOSA; however, the BCZS has no current system that allows it to capture issues. Therefore, until such time, the data will have to be reported by the FOSAs.

This information will allow calculating commodity indicators such as the following:

- Average monthly consumption
- Percentage of product expired
- Months of stock on hand (stock level)

Five of the data elements (*in italics*) that are monitored by SCMS are already included in the DHIS 2 data-capturing screen/form. The only difference with the SCMS form is that DHIS 2 does not allow the monitoring of products by batch, which at the health center level can be debatable (see Short-Term Recommendations).

Because DHIS 2 is an integrated system, it also allows the monitoring of indicators for various priority health programs (e.g., HIV/AIDS, Malaria, PMTCT, etc.), such as the following:

- Number of people tested
- Number of newly enrolled patients
- Number of patients on treatment (per regimen and age)

DHIS 2, therefore, should provide key information when a quantification exercise is conducted using both morbidity- and consumption-based methods (e.g., for ARVs or malaria products). It also means that all ARVs should be included in DHIS 2 (most of the malaria products are already included in the newly revised list). This was discussed with one of the persons responsible for the implementation of DHIS 2 in DRC. It was suggested that a specific USG commodities page(s) could be added in DHIS 2 for this purpose, which will make the inclusion of all other USG-supported commodities possible. Similar customized screens could also be developed to facilitate data capturing for other programs.

Similar systems such as GESIS, supported by the Belgian Cooperation Agency, have been successfully implemented in the North and South Kivu Provinces; however, because it does not offer a web interface, the MoH plan is to replace GESIS with DHIS 2.

Based on the team findings and other reports, caution is advised—it must be acknowledged that implementation of DHIS 2 is not the “miracle” solution that will resolve the availability of quality data for decision making. It is only a tool that can support it. Many other challenges need to be addressed, particularly the ones related to governance (supervision, accountability), infrastructure (power, IT equipment, communication, etc.), and human resources (motivation, skills, etc.).

DHIS 2 implementation should be done in a gradual manner, demonstrating that it can work and provide all required information to health personnel to monitor commodity availability and use, to support decision making, and to improve services.

The choice of the provinces and facilities is critical in trying to establish a proof of concept. During the debriefing of the team with the USAID/DRC Mission, addition of Katanga Province to the list of provinces selected for the DHIS 2 pilot was proposed. This suggestion was well received because it provides an opportunity for USG-supported IPs to have access to the data required to manage their programs. As indicated earlier, the addition of Katanga has been approved since the STTA was conducted.

USE OF MHEALTH SOLUTIONS TO STRENGTHEN DATA AVAILABILITY IN DRC

The findings in the previous section would be directly applicable to a paper-based data collection system. However, the same principles could be applied to an mHealth solution, even if for an interim LMIS (assuming that DHIS 2 is the ultimate mHealth goal). In the context above, the mHealth solution would facilitate the “top-down” data collection mentioned, though it could be applied at the facility level for direct data collection.

Ideally, an mHealth solution must be available in French. If an mHealth solution is adopted, then it must be able to

- Manage multiple simultaneous data entry points
- Manage a large number of products (e.g., all essential medicines, all laboratory products)
- Access updated forms (e.g., containing updated product lists)
- Provide offline data collection and later synchronization
- Export data to database format
- Interface with other systems
- Provide a local server or host computer to receive the data
- Provide a data validation component

During the field visits, four potential systems were identified. One that is compatible with the Apisoft system used at the CDR, the mHealth module of DHIS 2; OptiMaint Mobile; the Mango SMS Mobile from Greenmash, used by PMI-EP; and Frontline SMS, currently used by PROSANI.

mHealth with DHIS 2 (<http://www.dhis2.org/>)

In situations where mobile data coverage is available (however intermittent, as in rural DRC), using the mobile browser DHIS 2 interface would be an important complement to other client systems. One may also consider using a more advanced user interface customized for Android smartphones. The Android smartphone interface also supports offline data entry using HTML5.

The mobile browser interface complements users who ordinarily use web-based data entry but for some reason need to enter data while on the move. Because the browser is available in many existing handsets and requires little extra setup, basic training on how to access the system using the mobile browser should be included in the early phase of DHIS 2 deployment. Despite the large handset support for browser-based solutions, many projects still prefer limiting the handset base to a well-tested and controlled group of phones, to limit the support and training costs; during interim LMIS implementation by USG/IPs, if doing the top-down data collection mentioned above, handset use would be limited to designated IP staff. The cost for the phones is often only a very small part of the rollout of the system, and spending more on quality phones may give many advantages to future enhancements and evolution of DHIS 2 service.

The mobile phone input supports a highly flexible environment, allowing both the easy movement of the device to an area with connectivity and the transportability of the device for training and the sharing of information with other facilities.

DHIS 2 along with HTML5 allows for a client-side database and offline application cache that will ease the process of input in remote areas and at times of unstable Internet connections.

mHealth with OptiMaint Mobile (<http://www.apisoft.fr>)

OptiMaint Mobile is the mHealth component of the Apisoft software that is being implemented for the management of the CDRs. OptiMaint Mobile is not currently used in DRC. Typically OptiMaint Mobile can be used to capture messages (requests for intervention, maintenance, and support), can be used on- and offline using Bluetooth, can track transactions such as issues to clients, and can manage inventories. The use of OptiMaint mobile can be optimized with the use of barcode.

The main disadvantage of Optimaint Mobile is that its development platform requires using Pocket PCs, so its use requires specific hardware.

mHealth with Mango/Greenmash (<http://greenmash.com/products/mango/sms-mobile/>)

The web-based Mango system implemented by Greenmash through a subcontract with PSI has been customized to collect data for the PMI-EP program, including stock availability for 10 commodities. Data collection is done using the Mango SMS Mobile module. Each product has a preassigned letter (e.g., B = sulfadoxine/pyrimethamine, J = ACT adult dosage form) allowing the FOSA-based health officer to send a text message, using a simple phone, that includes the product code followed by the quantity in stock (e.g., “B 15 J 0” means that the sulfadoxine/pyrimethamine stock is equal to 15 and that there is no ACT adult dosage form in stock). The message is directly transmitted into a central server database. The operator uses more than 20 key strokes (at least two keystrokes per product) to capture one data element (e.g., quantity in stock) for all 10 products. The usage could be extended to more data elements; however, this method makes the data capturing cumbersome and prone to errors (e.g., if one has to capture four data elements for 20 products, a minimum of 100 keystrokes will be required). Triggers can be set up on the central server to validate the data. Greenmash offers a smartphone module that can be customized to accommodate formlike data entry; this option is not currently used in DRC. At this stage, all the Mango data are hosted on a UK-based server, and there is no immediate plan to host the data in DRC. The cost model for the use of the current system or additional modules was not shared with the team. Greenmash has developed an interface with DHIS 2 that is currently used in other countries.

mHealth with FrontlineSMS (<http://www.frontlinesms.com/>)

FrontlineSMS allows collection of data through a data connection from a mobile device: phone, tablet, or smartphone. Data can be collected within a form stored on the phone or tablet, which is then converted into a text message and transmitted to the central server. FrontlineSMS has been developed as freeware and is being used in other areas of DRC where ethernet connectivity is an issue. The greatest challenge of its implementation has been overcoming the user learning curve, but once overcome it has had great acceptance and use. One of the greatest advantages was user interest in technology; the technology was seen as an incentive, which also brought about user interest and participation. PROSANI is currently using FrontlineSMS PROSANI as a communication tool for health services in Kasai-Oriental, Kasai-Occidental, Sud-Kivu, and Katanga. The Community Champion Approach is currently running health campaigns using this tool. An evaluation report is expected to be completed in April 2014. In November 2012, this activity was recognized as innovative and functional when PROSANI received the Innovation Prize at the Dar es Salaam International Conference on the Use of Mobile Technology to Improve Family Planning and Reproductive Health.

FrontlineSMS is also used in Kenya and Uganda to provide stock-out data. The following is extracted from one of the Uganda reports⁶:

Stop Stockouts (Campaign) also use[s] FrontlineSMS in their monitoring activities such as “Pill Checks,” where researchers visit public health institutions to check on the availability of essential medicines. Researchers send an SMS containing the results to a common server, and the incoming data is managed via FrontlineSMS. These results are then reflected in an online map of the country, produced using mapping tool Ushahidi, and showing areas where medication is out of stock. This map provides real time evidence about the stock-out situation [at] a national level and serves as a compelling lobbying tool to the relevant authorities. The visual mapping of these “pill checks” has increased visibility of the Stop Stockouts [C]ampaign which has contributed to the success of the campaign.”

mHealth Recommendations

The use of mHealth technology can be developed and implemented at a very low implementation cost (PROSANI pays \$10 per month per phone) and free of charge to the user. The DHIS 2 mobile module is the preferred solution. However, if the development of the DRC version of DHIS 2 is not completed, the development of a small database using FrontlineSMS/Cloud that includes the key data elements to monitor products, along with mobile phones and training, would be an interim solution. Certain areas within the health zones could be selected and targeted as pilot zones.

⁶ Full story is available at <http://www.frontlinesms.com/2012/06/21/stop-stockouts-accountability-of-health-services-improved-by-frontlinesms/>.

The smartphone module of the Mango system, which is more user-friendly than simple text messages, could also be considered, provided an agreement can be reached with the Greenmash team.

Implementation of mHealth should be done in a very gradual and conservative manner, and staff should be made accountable for use of the supplied equipment (e.g., smartphone, tablet). Although the use of mHealth is very attractive, its implementation could be greatly limited by the constraints inherent to the weak existing mobile network coverage. The FrontlineSMS team reported that broadcasting outside Kinshasa remains a challenge. For example, in Kolwezi the signal was, at best, 17% of the bandwidth to support a typical mHealth system with an upload speed of 1.07 to 4.0 kbps and a download rate of 0 to 60.0 kbps, which delayed the sending of 100 SMSs to more than a few hours (2 hours 17 minutes). Overall, Airtel outperformed Vodacom in connection stability even though throughout the testing phase, Airtel was testing a new feature and therefore outages were commonplace. Orange and TIGO were not viable choices because they do not have infrastructure in rural areas.

RECOMMENDATIONS

Three structures within the DRC supply chain are critical in providing data for decision making: the CDRs, the BCZSs, and the FOSAs. All future efforts, therefore, should focus on strengthening their overall management and systems. Taking into consideration the current status of infrastructure, available equipment, human resources, and systems, and acknowledging the questionable quality of the data reported, the assessment team agreed that the recommendations need to be very conservative and realistic. This conclusion is supported by the team findings from the site visits and meetings that were held with the MoH and the IP managers.

Although the initial focus of this STTA was on strengthening the LMIS for all USG IPs and looking at the opportunity to implement a common integrated system, the various procurement and funding mechanisms supported by the USG impede having a fully integrated LMIS throughout the supply chain for all USG IPs because each uses its own procurement channels and systems. The upcoming Global Health Supply Chain contract might provide the opportunity to streamline these procurement practices and standardize processes and systems.

The MoH's upcoming plan to implement an integrated health management information system, DHIS 2, provides a unique opportunity for the IPs, including SCMS, SIAPS, and the USAID | DELIVER PROJECT, to have a common platform that can be used to monitor product availability and use with those of other products provided by non-USG-supported programs (e.g., Global Fund, DFID, etc.), thus ensuring the availability of timely and quality critical data to monitor activities at the lowest levels of the supply chain. At this stage, it is unrealistic to recommend a full-fledged LMIS down to the FOSAs. Transaction management and reporting should be considered first for the CDR level because CDRs are the main point of entry at the provincial level and most of them have adequate information technology equipment. Therefore, this report recommends engaging with the MoH to support the implementation of its LMIS framework (see figure 5) and its short-, medium-, and long-term plan.

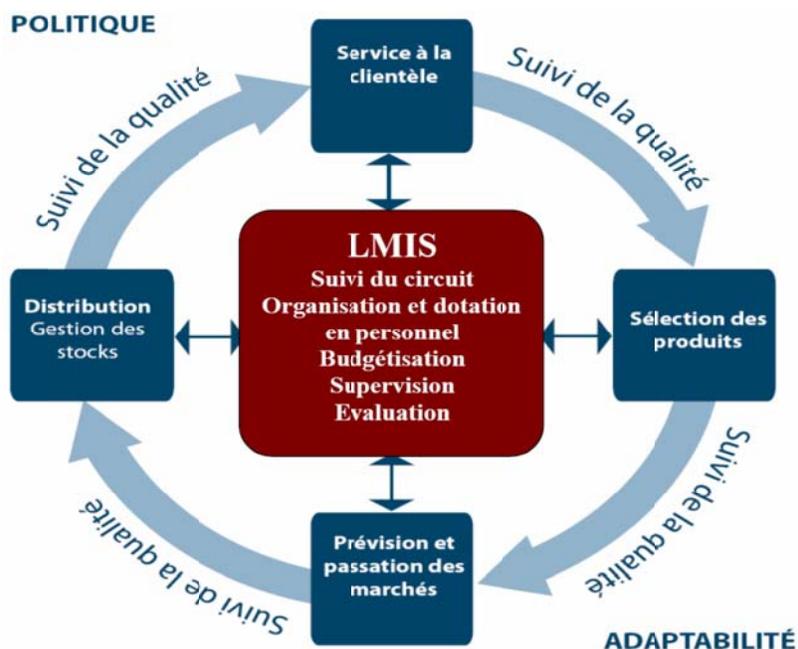


Figure 5. Ministry of Health LMIS framework

The following four areas identified in the framework should be supported by the LMIS:

- Delivery of services to clients
- Product selection
- Forecasting and tendering
- Distribution and stock management

As also indicated in this framework, it is critical to monitor the quality of the transactions and data that are processed throughout this cycle. The LMIS, therefore, plays a central role in M&E of the supply chain, the allocation of resources (budget and human resources), the supervision of personnel, and the evaluation of the quality of the data and services provided.

To support the overall recommendations, the team has identified an interim approach to support the LMIS implementation and a set of mid- to long-term recommendations.

Short-Term Recommendations

National and Central Levels

At the national level, USG-supported programs such as SCMS reported that the timely transmission of critical data elements is one of their main challenges. At this level, the visibility of stock variation that occurs as the result of transactions taking place at the lowest level is poor. This lack of data hinders the monitoring of stock availability as well as quantification and demand planning.

Reporting of key data elements, such as those included in DHIS 2, should be mandatory for all IPs. If required, a formal agreement might have to be developed and adopted by the IPs, and the reporting of these data elements should be included in their work plans as one of their deliverables and in their M&E plans as one of their project performance monitoring indicators.

A monitoring system should be implemented that will allow the capture of all transactions related to the procurement and distribution of products provided through the USG mechanisms. This should be done for products supplied through the SCMS or USAID | DELIVER, or other mechanisms (e.g., Global Fund). User requirements need to be developed in consultation with all parties involved. Developing a new system for that purpose is not an option. Mature systems that have already been used in other countries that are facing the same challenges as DRC should be assessed against the approved user requirements.

Figure 6 shows the transactions that are taking place at various levels of the supply chain and the reporting channels. During the first phase of the LMIS implementation, the proposed monitoring system should allow capture and processing of the requisitions and reports submitted by the IPs to support quantification, demand planning, and resupply.

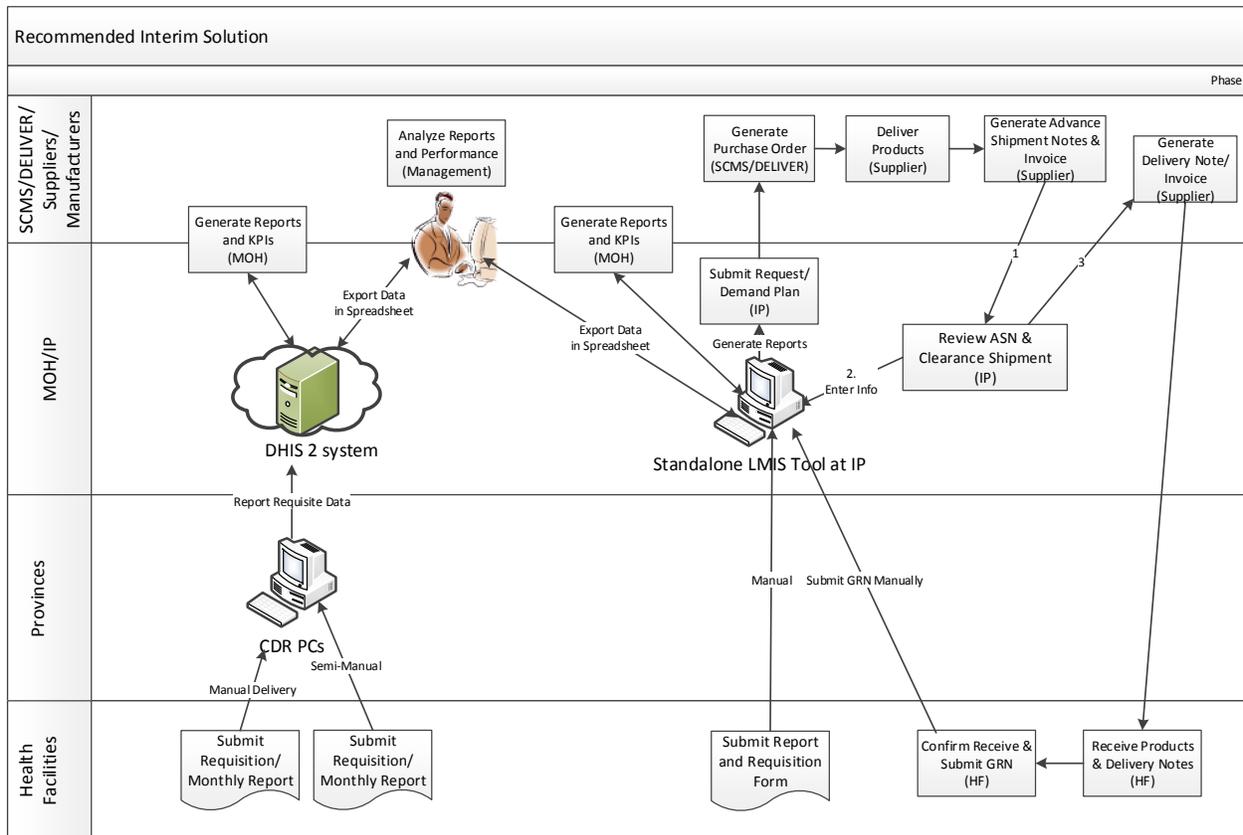


Figure 6. Transactions and reporting flow

Peripheral Level

Implementation of DHIS 2 in Katanga Province should be supported. All USG-supported IPs are involved in this province; therefore it provides a great opportunity for the USG and its IPs to demonstrate their willingness to support the MoH and advocate for scale-up when any progress is made and visible. This should be done first in a few health zones and health facilities where champions can be identified. Both the MoH and the DPS will have to be involved in the planning phase. This recommendation was well received by the USAID Mission during the final debriefing.

Although the use of DHIS 2 provides a viable long-term solution to LMIS needs, a number of challenges may impede the availability of required data in the short term. These challenges include the following:

- DHIS 2 will be rolled out in a phased approach, starting with five provinces in selected sites and adding more over time; as a result, data will be available from only a limited number of sites compared with the number of sites in the entire country.
- DHIS 2 will start with a limited number of “tracer products,” adding more products over time; as a result, data will not be available through DHIS 2 for all products managed or procured by USG partners.

Strategies are available for dealing with each of the above situations, for instance:

- Even given limited coverage, consumption data collected from the sites of the DHIS 2 pilot provinces could be extrapolated to estimate consumption for the country as a whole. For example, taking into consideration the percentage of the population covered by the sites located in the pilot provinces, the consumption data could be extrapolated to the country. [Note that this methodology would be recommended only for estimating national consumption; other data points such as stock on hand, days out of stock, and the like cannot be meaningfully extrapolated.]
- Analyzing the data from the current list of products monitored. Consumption data collected for the tracer products could provide indications of consumption of other similar products. For example, if data were collected only on artemisinin-based combination therapy (ACT) for the one-to-five-year age band, and if a good estimate of the percentage of malaria cases in that band as compared to the other age ranges were known, then one could extrapolate the requirements for the other age bands based on the one-to-five-year ACT data. As another example, if consumption data on laboratory specimen slides were reported, and a correlation between the number of slides used and the number of slide covers used could be determined, then the requirements for the latter could be inferred from the consumption of the former.

Although both of the methods noted above represent sound methodologies for dealing with data limitations, the DHIS 2 pilot would require that both of these methods be applied to obtain estimates of national-level consumption for a wider range of products: first by extrapolating

based on the percentage of sites for which there is data, and then extrapolating or inferring based on usage patterns among similar or related products. However, estimates for all products cannot be determined, even if using both methods (i.e., consumption of some products would be correlated to the consumption of products for which data are being collected).

Recognizing that the USG and its partners have a more immediate need for data than DHIS 2 is likely to provide, an interim approach should be implemented. The interim approach has the advantage of “speeding up” the availability of data but should also take into account the long-term goal of merging with the national system. In this context, an interim LMIS can be proposed but should adhere to the following criteria:

- Adhere to planned paper-based LMIS forms compatible with DHIS 2: As already cited elsewhere in this report as a strength, DHIS 2 is intended to collect all required logistics data; it should therefore serve as the basis for any “interim LMIS” that the USG partners might choose to implement. In this context, interim LMIS forms should collect the same data (the columns in the form) and follow the same format (the ordering of the columns on the form) as would be found in the paper-based data collection forms that will be used for DHIS 2. A sample is shown below (taken from an existing data collection tool, such as the Monthly Stock Report for Medicines and Medical Consumables, *Rapport Mensuel de Gestion des Médicaments et Consommables Médicaux pour HGR et AS*).

Product code	Product	Counting unit	Starting balance	Qty recd	Consumption	Physical count	Lot number	Expi-ration date	No. days out of stock	AMC
ABC001	Paracetamol 500 mg tabs	Tabs	XX	XX	XX	XX	YYYY	[date]	XX	XXX

- Product Code: national product code assigned by the central level
- Product: Product description, including generic name (e.g., paracetamol), strength/size (e.g., 500 mg, Size 21), and form (e.g., tabs)
- Counting unit: the unit in which the facility will report quantities of the product, e.g., tablets for tablets that are dispensed individually, blisters that are dispensed as a complete blister, bottles that are dispensed as full bottles (e.g., ARVs), etc.
- Starting balance: stock on hand at the start of the reporting period
- Quantity received: quantity received during the reporting period
- Consumption (Issues at higher-level facilities): quantities dispensed/used during the reporting period
- Physical count: Stock on hand at the end of the reporting period
- Lot number: lot number of the product as assigned by the manufacturer

Recommendations

- Expiration date: Expiration date of the product as determined by the manufacturer
- No. days out of stock: number of days during the reporting period on which stock on hand was zero
- AMC (Average monthly consumption): Average of consumption during the current reporting period and the prior one or two reporting periods

If the partners decide not to collect the lot number and/or expiration date for each batch at the FOSA level, other essential data elements should remain and appear in the same order on the form.

If lot number were not collected, then the columns would follow this order without rearranging the remaining columns:

Product code	Product	Counting unit	Starting balance	Qty recd	Consumption	Physical count	Expiration date	No. days out of stock	AMC
ABC001	Paracetamol 500 mg tabs	Tabs	XX	XX	XX	XX	[date]	XX	XXX

Implicit in the preceding recommendation is that all USG IPs agree on a standardized single reporting format, a step that SCMS has reportedly already taken; the only difference in the forms would be the list of products for which data are collected, which is based on the products being provided by or procured for the different partners.

For example, if a partner is managing or providing only malaria products, the form would look like this:

Product code	Product	Counting unit	Starting balance	Qty recd	Consumption	Physical count	Expiration date	No. days out of stock	AMC
ABX001	Malaria Product 1	Tabs	XX	XX	XX	XX	[date]	XX	XXX
ABX002	Malaria Product 2	Blister Pack	XX	XX	XX	XX	[date]	XX	XXX

If the partner were providing only family planning products, the form would look like this:

Product code	Product	Counting unit	Starting balance	Qty recd	Consumption	Physical count	Expiration date	No. days out of stock	AMC
ACX001	Family Planning Product 1	Tabs	XX	XX	XX	XX	[date]	XX	XXX
ACX002	Family Planning Product 2	Blister Pack	XX	XX	XX	XX	[date]	XX	XXX

If the partner were providing more than one type of product, then all relevant products would be included on the form.

One concern expressed during the consultancy was the ability to track the source of funding of the product, for example, MoH, Global Fund, USG, PMI. Although this might be desirable (each funder can see how and where its products are being distributed throughout the system), in practice, it may be difficult to achieve. At the facility level, unless the facility is receiving products directly from the funder, its only reference on who provided the product would be “CDR” or “zone,” depending on where the product is obtained. The health center is unlikely to be able to determine the original source of the product. One way of dealing with this issue might be to track the lot number all the way to the facility; lot numbers received by the facility could be compared with lot numbers provided by the funder. This would assume, of course, that each funder receives unique lots of products and that the IPs track this information when they first receive the products. However, tracking lot numbers might add complexity to the data collection process. This might be considered only when an electronic system can be used.

Data collection should be a “top-down” system, with central-level IP staff taking responsibility for the collection of data from those structures or facilities that receive their products. Already noted as a challenge in the existing system is the fact that data may or may not be provided by the health facilities and, if provided, the data may be “stopped” at the zone or other level as it tries to move up the chain back to the central level. In this context, any interim LMIS should not rely on the same method of transmission from the lower levels to the higher levels; the data would likely suffer the same fate. Instead, partners should take responsibility for collecting data as and where possible and as far down the distribution chain as possible. Issues data are currently generally available on quantities that are provided by the partners at the central level. The flow of products down the system should be followed, with data collected at successively lower levels of the system as and when possible through visits specifically for data collection or general supervisory visits: quantities distributed to the CDRs, quantities distributed to the zones or partner-established “hubs,” quantities distributed to health facilities. IPs would then use the data they collect for decision making. Appropriate resources should be allocated by the IPs to support this recommendation. These activities should be included in their work plans as one of their deliverables and in their M&E plans as one of their project performance monitoring indicators.

IPs must take a proactive approach to obtain the data, either by obtaining copies of reports from downstream facilities that do provide the reports, or by collecting the data from nonreporting facilities. In cases where issues data are being collected, the same format as shown above can be used, with “issues” replacing “consumption” on the form. (A notation will also have to be made indicating the type of data that is being collected, e.g., “issues from CDR to zones”; “issues from zones to facilities”; “distribution to clients”, etc.)

A challenge will be that all data may not be collected from all zones, IP-designated hubs, or service delivery points during each month or reporting period; however, as data

collection becomes more widespread, a larger quantity of data will be available, and a higher portion of issues data at the intermediary levels or consumption at the facility level should be more available. At the same time, data that are available can be extrapolated as previously noted to account for any missing data.

Data collection should reflect the actual distribution channels used. Data collection among the IPs should be based on the distribution channels currently being used: if products are distributed by the IPs to a CDR, then issues data should be collected from the CDR (quantities issued to lower levels by the CDR, e.g., to zones or to health facilities); if products are distributed by the IPs to zones or IP-designated hubs, then data should be collected from the zones or IP-designated hubs (quantities issued to lower levels by the zone/hub, e.g., health facilities).

- Collect and monitor any data that already exist whenever and wherever it is available. The top-down approach outlined has its own limitations, including the fact that not all data may be available at every reporting period. To make the set of available data more robust, data collection should be done at every available opportunity. For example, when resupplying a zone or hub, the IP can gather data on quantities of products that were issued to the zone or hub and at the same time collect consumption data from any and all facilities that have reported to the zone or hub. Although the set of data may not be complete (not from all facilities, not for all products), the data will allow some comparison between issues and consumption; in cases where all or most facilities have reported consumption data to the zone, the data for those products can be used instead of the data on issues to the zone (adjusting the consumption data for missing facilities, if needed). Regardless of the approach used, a data validation mechanism will have to be developed and implemented.
- Collect or monitor DHIS 2 data as soon as it becomes available. Similar to the preceding for the existing paper-based system, DHIS 2 data should be collected and monitored as soon as it starts becoming available. If implemented as planned, DHIS 2 may include data on only a limited number of tracer products. In that case, such data should still be collected and monitored. Data collected through DHIS 2 and the interim LMIS can be compared for data quality assurance, and upstream data collected through the interim LMIS can be compared with downstream data available through DHIS 2. For the products tracked through DHIS 2, at a minimum this would give a comparison of the quantities of products being issued (as reported in the interim LMIS) and the quantities of products being used or consumed at the facility level (as reported through DHIS 2).

Mid- to Long-Term Recommendations

- As the existing CDRs are improved and as more CDRs play their expected roles to support the national system, channel products through CDRs and then to the health zones and eventually to health facilities. Phase out any temporary parallel distributions (e.g., direct to zones or IP-designated hubs by IPs).

The specific timeframe for the transition into the full national system will depend on the rate at which CDRs are improved or become operational and the rate at which DHIS 2 is implemented. The interim LMIS can be implemented as soon as is practical: forms printed (or produced for mobile solution, see below) and distributed and data collection conducted. Once into the transition, a short period of duplicate data collection may be necessary, allowing time to ensure that all required data for USG-funded commodities are being provided and made available through DHIS 2 and that the data are of good quality.

- Similarly for the LMIS, as the national system rolls out and becomes more comprehensive, phase out parallel data collection. Assuming successful implementation of DHIS 2, data on all products would be available through the web portal where all interested parties could access it, including the USG IPs.
- Align the M&E tools used by the IPs as well as the data collection tools and reporting formats used by the IPs with the MoH LMIS framework. For example, the monthly report currently compiled by SCMS from the data provided by the PEPFAR IPs includes all the elements that are recommended by the MoH. Partners need to ensure that the products managed by the IPs are included in the list of products to be monitored in DHIS 2. To facilitate tracking of USG products at the national level another data element should be added: the source or origin (MoH vs. IPs) of the product at least at the CDR level. Reporting can be facilitated if some of the routine data collection forms (e.g., RUMER, monthly medicines report) are preprinted in duplicate with the agreed list of products to be monitored. Revise the format of the stock card to become a more useful management tool (smaller size, include a summary consumption table, printed on stronger paper) and make the card widely available. This should be complemented by proper standard operating procedures and manuals or guidelines.
- Standardize the description of all medicines and commodities across all forms and systems and ensure that it includes at least the national code, generic name, form, strength, pack size, and counting unit.
- Review and reduce the number of recommended forms to be completed at each level. The team found that too many forms are required. It is overly optimistic to think that all of these forms will be completed in a timely, reliable, and accurate manner. As long as the system remains a manual system, only one comprehensive form should be used. The monthly report on essential medicines use seems the most appropriate.
- Harmonize the supervision program and schedule with the MoH, and include MoH staff (central, DPS, zone) in supervision visits. Share reports, information, and data with the MoH. Supervision is weak; the IPs should collaborate with the MoH in developing supervision guidelines and conducting joint supervisory visits to ensure coordination without overburdening the staff. The MoH expressed concern that partners' supervisory visits are conducted separately in most cases. These visits should include routine spot checks (e.g., physical vs. recorded stock) together with data collection and validation exercises (e.g., collection and verification of consumption data, identification of short-shelf-life items) for sample products to improve data quality. The relevant findings of this STTA should be

shared during the monthly M&E meetings held at the health zone level and in other relevant national and provincial forums. With support from the USAID Mission, getting timely and quality logistics data should be one of the explicitly documented, routinely measured and monitored, and periodically reported deliverables by IPs over the coming months and years.

- Use MoH distribution channels whenever feasible. As reported, IPs end up creating vertical distribution channels to ensure that their products reach the patient (e.g., EGPAF’s use of “hub and spokes”). Some of these practices are not sustainable because they will not be supported by the MoH once the IP’s support comes to an end; therefore the IPs should move toward using the CDRs and the BCZSs to eventually reach the FOSAs. This, of course, cannot be done with the current infrastructure (e.g., storage conditions and space). Ideally the supply chain and data flow should be streamlined as described in figure 7.

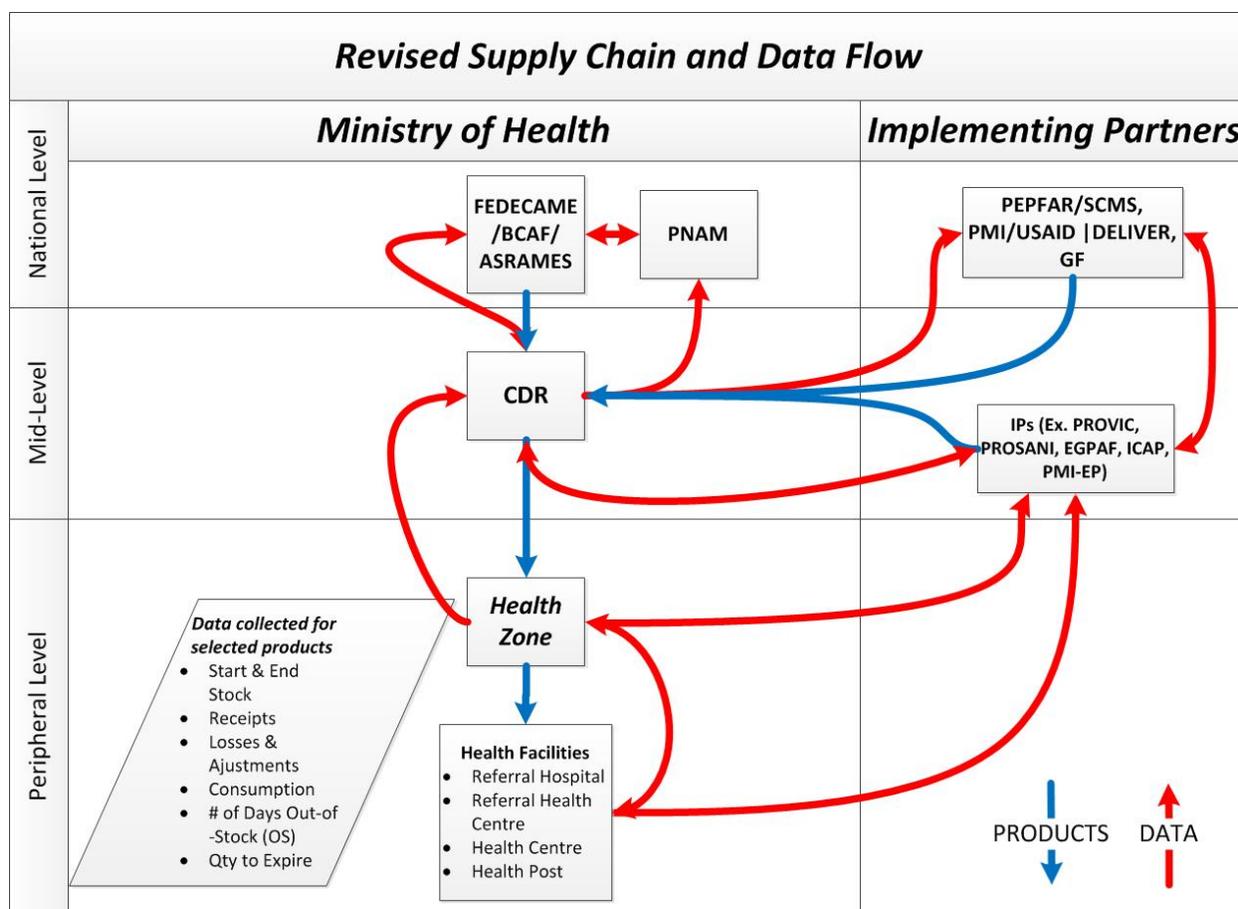


Figure 7. Proposed supply chain and data flow

- Ensure IP support of the role of the CDRs. The CDRs are the first point of entry to the public sector for many medicines and other commodities. Joint technical assistance should be provided by the IPs supporting the supply chain (SCMS, SIAPS, and USAID | DELIVER PROJECT) to improve CDR management and the use of the Apisoft system, which is endorsed by the MoH, and to assist with CDR upgrades (e.g., upgrading the

Lubumbashi CDR from a transit store to an official CDR). Implementation of the Apisoft web-based module at the BCZS and referral hospital levels in the first phase should be explored with the development of an interface with DHIS 2. Standardized reporting formats should be developed.

- Computerize the PROSANI warehouse in Kinshasa. The products stored and distributed through the warehouse used by PROSANI in Kinshasa are currently managed with a manual system complemented by the use of a spreadsheet. The Apisoft system should be implemented to be on par with the MoH. It will also provide an opportunity to the PROSANI and SCMS staff to get an insight into this system and facilitate any future migration of the data when CDRs (e.g., CAMESKIN) manage products currently held in the PROSANI warehouse.
- Support commodity management and M&E capacity development of staff at all levels. Develop a master plan for medicines supply management training, tailored to each level (CDR, BCZS, FOSA) and using a mentorship or a training-of-trainers approach. Develop and disseminate proper manuals and guidelines. This plan should include a strong M&E component to support the monitoring of the relevant MoH and USG supply chain indicators.
- Support a national quantification exercise for ARVs and other related commodities. The quantification of ARVs managed by the IPs is currently done to address the specific PEPFAR targets. The quantification of ARVs should be done using the same model as for the malaria program, at the national level with input from all stakeholders. Both consumption- and morbidity-based approaches should be used. The quantification should also allow the various stakeholders to share their resources, ensure coordination, and avoid overlap; however, it should not prevent the IPs from identifying their requirements to fulfill the PEPFAR targets. The same approach should be considered for other related products.
- Create an inclusive IPs/MoH forum to share data related to the management of the supply chain. Implement routine sharing of relevant logistics data in a forum to promote communication among the IPs and other stakeholders and integration of their activities into the MoH. This is currently being done without the involvement of the MoH. This information should include key data elements such as available stock on hand held by the IPs, quantity issued, product arrival, and shelf life status.

These recommendations imply major investments (time, equipment, and money) that could not be quantified at this stage and major changes in the way all stakeholders are currently operating. Resistance to change must be anticipated. To gain buy-in to support these recommendations and develop a quantifiable set of activities, a consultative meeting should be held among the implicated IPs first, to discuss these recommendations and clarify roles and responsibilities. This information can be shared at a later stage with other stakeholders.

During the team debriefing, the USAID Mission was very keen to support these recommendations. CDC will also have to be engaged in the discussions during future IP/USG meetings because it funds some of the IPs.

ANNEX A. VISITING TEAMS

Team A: Kasai Oriental

- Gregory Roche, Senior Technical Advisor, USAID | DELIVER PROJECT/JSI
- Marc Baswa, M&E Officer, SIAPS/DRC M&E
- Albert Kalonji, Kasai Oriental Provincial Representative, SIAPS/DRC
- Roger Mbuku, M&E Officer, MoH/CAG
- Mascoty Tungunga, M&E Officer, MoH/PNAM

Team B: Katanga

- Jean-Pierre Sallet, Senior Principal Technical Advisor, SCMS/MSH
- François Tshitenge, Katanga Provincial Representative, SIAPS/DRC
- Antoine Masekwe, Logistics Manager, SCMS/DRC
- Franck Biayi, Procurement Manager, MoH/CAG

Team C: Katanga

- Paul Neely, mHealth Consultant, SIAPS
- Ruphin Mulongo, Deputy Director, SIAPS/DRC
- Jean-Pierre Lelo Nzita, Responsible for SNAME, MoH/PNAM

ANNEX B. FACILITIES VISITED

Katanga Province

Lubumbashi

DPS Katanga

CDR Camelu

ZS de Kisanga: BCZS Kisanga, HGR Kisanga, CS Mama wa Huruma et Ste Bernadette

ZS de Kenya: BCZS Kenya

Total : 6 facilities

Kolwezi

DPS Kolwezi

Dépôt CDMEK

ZS de Kanzenze: BCZS Kanzenze, HGR Tshamundenda, CS Tshala and CS Walemba

ZS de Manika: BCZS Manika, HGR Mwengeji, CSR Manika, CS Kasulo

Total : 10 facilities

Kasaï Oriental Province

Mbuji Mayi

DPS Kasaï Oriental

CDR Cadmeko

ZS de Dibindi : BCZS Dibindi, CS Don de Dieu, CS Markal

ZS de Lukelenge : BCZS Lukelenge, CS St Mardochée, CS du peuple

ZS de Kanda-Kanda : BCZS Kanda-Kanda, CS Kabwela

Total : 10 facilities

Mwene Ditu

ZS de Makota : BCZS Makota, HGR Christ Roi, CS Ste Marie

ZS de Kanda-Kanda : BCZS Kanda-Kanda, CS Kabwela

Total : 5 facilities

ANNEX C. QUESTIONNAIRES USED DURING THE FIELD VISITS

Grille d'évaluation du SIGL

Date :

Province(DPS) :

Zone de Santé :

HGR :

CS :

Equipe (enquêteurs):

Personne visitée :

1) Médicaments

a) A .Niveau intermédiaire(CDR) :

- i) Faire la liste des tous les fournisseurs qui vous approvisionne en médicaments essentiels et autres produits (ex. test, fourniture médicale, etc..)

- ii) Quel est votre fournisseur principal ?
- iii) Comment sont évalués les besoins pour établir la commande ?
 - (1) sur base théorique en fonction de la prévalence ajustée aux conditions particulières
 - (2) sur la consommation antérieure
 - (3) sur la cible du projet
- iv) Quel est l'outil utilisé pour quantifier les besoins ?
 - (1) Informatique :
 - (2) Manuel :
 - (3) Décrivez la méthode/l'outil
- v) Quel est l'outil utilisé pour gérer les entrées, les stocks, les sorties et la dispensation ?
 - (1) Informatique :
 - (2) Manuel :
 - (3) Décrivez la méthode/l'outil :

- vi) Les commandes sont-elles regroupées au niveau provincial ?
 - (1) Oui
 - (2) non
- vii) Pour la dernière commande : Quel est le délai de livraison en jours entre l'émission de la commande et sa livraison ?
- viii) Existe-t-il un dépôt central pour les médicaments essentiels (incl. ARVs) à l'échelon provincial ?
 - (1) Oui
 - (2) non
- ix) Le dépôt utilisé est-il conforme aux normes ? (superficie de local, conditions de conservation, conditions de stockage)
 - (1) Oui
 - (2) non

Grille d'évaluation du SIGL

Date :

Province(DPS) :

Zone de Santé :

HGR :

CS :

Equipe (enquêteurs) :

Personne visitée :

a) **B.Niveau intermédiaire (DPS)**

- i) Existence d'une unité de suivi évaluation au sein de la DPS : Oui Non
- ii) Existence des ressources humaines chargé de Suivi- évaluation : Oui Non
- iii) Nombre des personnes chargées de suivi -évaluation :
- iv) Qualification des personnes chargées de suivi-évaluation :
- v) Existence d'un outil logiciel : Oui (nom du logiciel :) Non
- vi) Les données logistiques essentielles (consommation, stock disponible, pertes/ajustements) des MEGs des ZS et CDR sont elles compilées ? Oui Non
- vii) Les données des ZS sont elles analysées ? Oui Non
- viii) Les documents pour feed back aux ZS sont ils disponibles ? Oui Non
- ix) Quelle est la périodicité de réception des données des ZS ?
Mensuelle trimestrielle semestrielle
- x) Quelle était la complétude en 2012 ?
- xi) Quelle était la promptitude en 2012 ?
- xii) Le rapport DPS contient il des données sur les médicaments ? Oui Non (Voir dernier rapport)
- xiii) La DPS calcule- t- elle les indicateurs sur les médicaments ? Oui Non
- xiv) L'indicateur nombre des formations sanitaires ayant connu des ruptures de stock en médicaments traceurs est il calculé ? Oui Non
- xv) **Outils informatiques (suivi-évaluation, service d'approvisionnement, avec commentaire)**
 - (1) Nombre d'ordinateurs et d'imprimantes
 - (a) Portable fonctionnel
 - (b) Portable non fonctionnel
 - (c) Fixe fonctionnel
 - (d) Fixe non fonctionnel
 - (e) Imprimante fonctionnelle
 - (f) Imprimante non fonctionnelle
 - (2) Nombre de personnes formées a l'utilisation des outils informatiques
- xvi) Moyen de communication disponible au niveau du site
 - (1) Réseau local (plusieurs ordinateurs branchés sur le réseau pour partage des informations)
 - (a) Oui
 - (b) Non
 - (c) Si oui décrivez:

Grille d'évaluation du SIGL

Date :

Province(DPS) :

Zone de Santé :

HGR :

CS :

Equipe :

a) Structure périphérique :

- i) Les médicaments essentiels livrés lors de la dernière livraison sont-ils conformes en quantité et en produits à la commande émise par la structure ?
 - (1) Oui
 - (2) non
 - (3) Si non précisez ce qui manque (préciser en clair)
- ii) Pour cette transaction : délai en jours entre la commande et la livraison sur le site
- iii) Délai moyen en jours entre la commande et la livraison pour les 3 dernières commandes
- iv) Durée de validité en mois (date de péremption) à la livraison pour 3 molécules :
 - (1) AZT + 3TC , cp
 - (2) Préservatif masculin
 - (3) Test pour le paludisme
 - (4) **Produit 1: (selon la dernière livraison reçu par la structure)**
 - (5) **Produit 2: (selon la dernière livraison reçu par la structure)**
 - (6) **Produit 3: (selon la dernière livraison reçu par la structure)**
- v) Cochez les produits ayant manqué au moins 1 fois sur le site durant les 6 derniers mois
 - (1) AZT + 3TC , cp
 - (2) Préservatif masculin
 - (3) Test pour le paludisme
 - (4) Produit 1: paracetamol (cp 500mg)
 - (5) Produit 2: amoxycillin (cp 500mg)
 - (6) Produit 3: SRO
- vi) Nombre total de jours de rupture sur le site durant les 6 derniers mois pour chacun des produits suivant :
 - (1) AZT + 3TC , cp
 - (2) Préservatif masculin
 - (3) Test pour le paludisme
 - (4) Produit 1: paracetamol (cp 500mg)
 - (5) Produit 2: amoxycillin (cp 500mg)
 - (6) Produit 3: SRO
- vii) Nombre de patients ayant dû arrêter le traitement ARV pour cause de rupture
- viii) Nombre de patients ayant dû modifier leur traitement ARV pour cause de rupture

Grille d'évaluation du SIGL

Date :

Province(DPS) :

Zone de Santé :

HGR :

CS :

Equipe :

a) Niveau ZS

- i) Existence des ressources humaines chargé de gestion MEG : Oui Non
- ii) Nombre des personnes chargées de gestion MEG :
- iii) Qualification des personnes chargées de gestion MEG :
- iv) Existence d'un outil de compilation : Oui Non
- v) Existence d'un logiciel pour la compilation des données logistiques : Oui (nom du logiciel :) Non
- vi) Les données logistiques essentielles (consommation, stock disponible, pertes/ajustements) des MEGs des ZS sont-elles compilées ? Oui Non
- vii) Les données des formations sanitaires sont-elles analysées ? Oui Non
- viii) Les documents pour feedback aux formations sont-ils disponibles ? Oui Non
- ix) Quelle est la périodicité de réception des données des formations sanitaires ?
Mensuelle trimestrielle semestrielle
- x) Quelle était la complétude en 2012 ? %
- xi) Quelle était la promptitude en 2012 ? %
- xii) Le rapport ZS contient il des données sur les médicaments ? Oui Non (Voir dernier rapport)
- xiii) La ZS calcule-t-elle les indicateurs sur les médicaments ? Oui Non
- xiv) L'indicateur nombre des formations sanitaires ayant connu des ruptures de stock en médicaments traceurs est-il calculé ? Oui Non
- xv) Avez-vous connaissance de l'existence d'un stock tampon au niveau du partenaire d'appui ?
 - (1) Oui
 - (2) Non
 - (3) Combien de mois de stock
- xvi) Quel est le niveau de votre stock tampon
 - (1) Maximum (mois)
 - (2) Minimum (mois)
- xvii) **Outils informatiques (BCZ)**
 - (1) Nombre d'ordinateurs et d'imprimante
 - (a) Portable fonctionnel
 - (b) Portable non fonctionnel
 - (c) Fixe fonctionnel
 - (d) Fixe non fonctionnel

ANNEX D. LIST OF PEOPLE MET OR CONSULTED

In addition to the people met during the field visits, the team consulted with the following people:

Organization	Name	Position	
CAMESKIN	Paulin Mangungu Witeni	Director	
	Richard Mulanba Biayi	Deputy Director	
EGPAF	John Ditekemena	Country Director	
	Jo Bakualufu N. Mushitu	Technical Director	
	Serge Nkondi Minkola Ndosimau	Pharmacist	
Greenmash	Andrew Wyborn	Chief Executive Officer	
ICAP	Tania Tchissambou	Clinical/Technical Director	
	Faustin Malele	Country Director	
	Julien Tembea	Logistics Officer	
	Rose Zunza	Stock Manager	
Liverpool University	Caroline Maxwell	PMI Adviser	
PROSANI	Ousmane Faye (met in Arlington)	Director	
	Gilbert Andrianandrasana	Deputy Director	
MoH	Mukengeshayi Kupa	General Secretary	
MoH 5 th Direction	Salomon Salumu Syangoli	SNIS Section Chief	
	Eric Katang	Technical Adviser	
MoH/CAG	Frank Biayi	Procurement Manager	
	Roger Mbuku	M&E Officer	
MoH/DPM	Daniel Ngeleka	Manager	
MoH/PNAM	Jean-Pierre Lelo Nzita	Responsible for the SNAME	
	Mascoty Tungunga	M&E Officer	
MoH/PHC Services	Yakim Kabangu Lubika	SNIS Senior Technical Adviser	
PMI-EP/ASF	Louis Akulai	Chief of Party	
PROVIC	Trad Hatton	Chief of Party	
	Jean-Claude Nguima	Pharmacist	
	Denise Ndagano	M&E	
	Bradley Barker	Director	
SCMS	Antoine Masekwe	Logistics Manager	
	Ruphin Molongo	Deputy Director	
SIAPS	Francois Thsitenge	Katanga Provincial Representative	
	Marc Baswa	M&E Officer	
	Albert Kalonji	Kasai Provincial Representative	
	Philippe Tshiteta	Director/MSH Country Representative	
	USAID	Anne-Marie Frere	Health Officer
		Charly Mampuya	Health Officer
Xavier N'Siesi		Health Officer	
Meri L. Sinnitt		Health Officer Director	
	Jose Tchofa	Health Officer	

ANNEX E. SAMPLE LIST OF REPORTS TO BE SUBMITTED BY HEALTH FACILITIES

No	Designation	Domaine	Période
1	Releve E.P. Hebdo	Epidemio	Semaine
2	Releve E.P. Mensuel	Epidemio	Mois
3	Rapport PNLP	Paludisme	Trimestre
4	Rapport PNLT	LTBC	Mois
5	Rapport PNLs	VIH	Mois
6	Rapport PRONAHUT	Nutrition	Mois
7	Rapport Financier	Gest. Financiere	Mois
8	Rapport Pharmacie	Gest. Medicaments	Mois
9	Formulaire 1	PEV	Mois
10	Formulaire 2	PEV	Mois
11	Rapport MOSO (Mobilisation Sociale)	Communication	Mois
12	Rapport H, E & A (hygiene, Eau, Assainissement)	Assainissement	Trimestre
13	Liste Actualise Personnel	Gest. Personnel	Trimestre
14	Inventaire Materiel	Gest. Materiel	Mois
15	Rapport SNIS	Integre	Mois
16	Rapport Supervision	VIH & Integre	Mois
17	Rapport VAD	VIH	Mois
18	Rapport Video F.	VIH	Mois
19	Causerie Educative	VIH	Mois
20	Validation Donnees	VIH	Mois
21	Reunion P.E. & ECO	VIH	Mois
22	Rapport Prise en Charge	VIH	Mois
23	Rapport PMTE	VIH	Mois
24	Rapport DCIP	VIH	Mois
25	Rapport Coinfection	VIH	Mois
26	Plannification Conges	Gest. Personnel	Annee
27	Rapport IST	Integre	Mois
28	Transfusion Sanguine	Integre	Mois
29	Rapport SRO & Zinc	Integre	Mois
30	Utilisation des Velos	Integre	Mois

ANNEX F. REFERENCE HOSPITAL AND HEALTH CENTER LIST OF TRACER MEDICINES

No.	Description	Referral hospital	Health center
1	Amoxicillin 1 g Inj.	X	X
2	Amoxicillin 250 mg Tab	X	X
3	Artesunate, Amodiaquine 50/153 mg Tab		X
4	AZT, 3TC, LPV/RTV Tab	X	
5	AZT, 3TC, NVP Tab	X	
6	Ceftriaxon 1 g Inj.	X	X
7	Chlorhexidine Solution 7.1%	X	X
8	Cotrimoxazole 480 mg Tab	X	X
9	Determine Test Kit	X	X
10	Dexamethason 4 mg Inj.	X	X
11	Dextrose 5% IV Fluid	X	X
12	Diazepam 5 mg/2 ml Inj.	X	
13	Female Condom		X
14	Levonorgestrel 750 mcg	X	X
15	Magnesium Sulfate		X
16	Mebendazole 100 mg Tab	X	X
17	Metronidazole 250 mg Tab	X	X
18	Misoprostol 200 mcg	X	
19	ORS Sachet	X	X
20	Oxytocin 10 UI Inj		X
21	Paracetamol 500 mg Tab	X	X
22	Quinine Inj.	X	
23	R150H75 Tab	X	X
24	R150H75Z400E275 Tab	X	X
25	Ringer's Lactate IV Fluid	X	X
26	Salbutamol Sulfate 4 mg Tab	X	X
27	TDF, 3TC, EFV Tab	X	
28	TDR		X
29	Zinc 20 mg scored Tab	X	X
	Total	24	23

ANNEX G. COMMODITIES TO BE REPORTED ON UNDER DHIS 2, REFERRAL HOSPITAL, AND HEALTH-ZONE LEVELS

No.	Description
1	Aspirine Co 500 mg
2	Paracétamol 500 mg
3	Artémether inj 40 mg
4	Artémether inj 80 mg
5	Artésunate-Amodiaquine (12-59 m)
6	Artésunate-Amodiaquine (2-11 m)
7	Artésunate-Amodiaquine (6-13 a)
8	Artésunate-Amodiaquine (14a+)
9	Luméfantrine + Artéméter
10	Quinine amp 600 mg
11	Quinine co 500 mg
12	TDR
13	SP 500/25 mg, co
14	MIILD
15	Diazepam 5 mg amp
16	SRO
17	Zinc 20 mg
18	Amoxicilline caps 250 mg
19	Amoxicilline caps 500 mg
20	Amoxicilline 1 g, Vial, Unité
21	Cotrimoxazole 480 mg
22	Ceftriaxone 1 g inj
23	Gentamycine
24	Ciprofloxacine, 2 mg/ml, 100 ml, Flacon, Unité
25	Péni procaine+Benzyl 3+1 MIU, amp
26	Hydralazine
27	Hydrocortisone
28	Mébéndazole 100 mg
29	Métronidazole 250 mg co
30	Preservatif féminin
31	Preservatif masculin
32	Depo-Provera
33	DIU
34	Microgynon
35	Implant
36	Plaquettes des Pilules
37	Determine
38	Double check
39	Kit PEP
40	Névirapine Sirop
41	AZT+3TC+ NVP Sirop (pédiatrique)
42	AZT+3TC+EFV
43	AZT+3TC+LPV/r (pour VIH 2)
44	AZT+3TC+NVP
45	ABC+ddI+LPV/r
46	Kit groupage sanguin
47	Transfuseur avec filtre
48	Poche de transfusion, u.u., 250 ml, Unité

No.	Description
49	Poche de transfusion, u.u., 450 ml, Unité
50	Kit test sécurité transfusionnelle
51	Kit test VIH pour site PTME
52	Test HCV Hepatitis C, Rapid for HCV
53	Test Hepatitis B HbsAg Determine
54	Test HIV 1+2 (Determine)
55	Test Kit, HIV 1+2, Elisa, 192T Vironostika Uniform II plus 0 *
56	Test Syphilis (RPR ou SD Bioline)
57	Insuline
58	Morphine
59	Oxytocine 10 UI
60	Methylergométrine amp 1 ml
61	Misoprostol
62	Sulphate de magnésium
63	Salbutamol 4 mg, co
64	Na DCC co
65	RH
66	RHZ
67	RHZE
68	Compresses de gaze
69	Dakin (Na DCC co)
70	Aiguilles 21 G
71	Seringue 5 ml
72	Eau ppi 5 ml fl
73	Lidocaïne 2%, fl
74	Ketamine, 50 mg/ml, 10ml, Vial, Unité
75	Adrénaline
76	Atropine
77	Hydrocortisone
78	Sut., PGA, tressé, 75 cm, déc. 3 (2/0), aig. ½ c, R, eff., 30 mm, Un.
79	Sut., PGA, tressé, 75 cm, déc. 4 (1), aig. ½ c, R, eff., 30 mm, Un.
80	Sut., PGA, tressé, 75 cm, déc. 4 (1), aig. ½ c, R, eff., 50 mm, Un.
81	Sut., PGA, tressé, 75 cm, déc. 4 (1), aig. 3/8 c, R, eff., 50 mm, Un.
82	Dextrose (Glucose),50%, 50ml,Vial,Unité
83	Dextrose (Glucose) + NaCl, 5%+0,9%, 500 ml, Perfusion, Unité
84	Dextrose (Glucose), 5%, 500 ml, Perfusion, Unité
85	Dextrose(Glucose)5% 250 ml, Perfusion, Unit
86	Ringer lactate (Solution de Hartmann), 500ml, Perfusion, Unité
87	Catheter Court IV avec site d'injection, U.U., 24G (0,7*19mm), jaune, Unit
88	Catheter court IV, avec site d'injection, uu, 22G (0,8*25mm), bleu
89	Catheter court IV, avec site d'injection, uu, 20G (1.0*32mm), rose,U
90	Sonde Urinaire
91	Réactif radiologie

ANNEX H. COMMODITIES TO BE REPORTED ON UNDER DHIS 2, HEALTH-CENTER LEVEL

No.	Description
1	Aspirine Co 500 mg
2	Paracétamol 500 mg
3	Artémether inj 40 mg
4	Artémether inj 80 mg
5	Artésunate-Amodiaquine (12-59 m)
6	Artésunate-Amodiaquine (2-11 m)
7	Artésunate-Amodiaquine (6-13 a)
8	Artésunate-Amodiaquine (14a+)
9	Luméfantrine + Artéméther
10	Quinine amp 600 mg
11	Quinine co 500 mg
12	TDR
13	SP 500/25 mg, co
14	MIILD
15	Diazepam 5 mg amp
16	SRO
17	Zinc 20 mg
18	Amoxicilline caps 250 mg
19	Amoxicilline caps 500 mg
20	Cotrimoxazole 480 mg
21	Ceftriaxone 1 gr inj
22	Gentamycine
23	Mebendazole 100 mg
24	Métronidazole 250 mg co
25	Preservatif féminin
26	Preservatif masculin
27	Preservatif masculin
28	Depo-Provera
29	DIU
30	Microgynon
31	Implants
32	Plaquettes des Pilules
33	Determine
34	Double check
35	Kit PEP
36	Névirapine Sp
37	Oxytocine 10 UI
38	Methylergométrine amp 1 ml
39	Misoprostol
40	Sulphate de magnésium
41	Salbutamol 4 mg, co
42	Na DCC co
43	RH
44	RHZ
45	RHZE
46	Compresses de gaze
47	Dakin (Na DCC co)
48	Aiguilles 21 G
49	Seringue 5 ml
50	Eau ppi 5 ml fl
51	Lidocaïne 2%, fl

