Benin National Supply Chain Assessment

March 2016

USAID
FROM THE AMERICAN PEOPLE

SIAPS
Systems for Improved Access
to Pharmaceuticals and Services

Benin National Supply Chain Assessment

E. Nfor
L. Maxim
A. Gbaguidi
M. Levenger
S. Conesa

March 2016

About SIAPS

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.

Recommended Citation

This report may be reproduced if credit is given to SIAPS. Please use the following citation.

Nfor E, Maxim L, Gbaguidi A, Levenger M, Conesa S. 2016. *Benin National Supply Chain Assessment.* Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

Key Words

procurement, quantification, inventory management, warehousing, transportation, pharmaceutical waste management, human resources for supply management, supply chain management, pharmacovigilance, governance and regulatory system, quality assurance

CONTENTS

List of Tables

List of Figures

ACRONYMS AND ABBREVIATIONS

ACT	artemisinin-based combination therapy
ADR	adverse drug reaction
AIDS	acquired immunodeficiency syndrome
ARV	antiretroviral
CAME	Centrale d'Achat des Médicaments Essentials (central medicines store)
CHD	Centre Hospitalier Départemental
CHW	community health worker
CNAPS	Comité National d'Approvisionnement en Produits de Santé (National Health Products Supply Chain Committee)
CNHU	Centre National Hospitalier et Universitaire
CS	*centre de santé* (health center)
DDS	Direction Départmentale de la Santé (health department)
DPMED	National Directorate for Pharmacy and Laboratories (Direction de la Pharmacie, du Medicament et des Explorations Diagnostiques)
DRZ	Dépôt Répartiteur de Zone
DSME	Direction de la Santé de la Mère et de l'Enfant (Directorate of Mother and Child Health)
FEFO	first-expiry, first-out
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HOMEL	Hôpital de la Mère et de l'Enfant Lagune
HZ	Hôpital de Zone
KPI	key performance indicator
LMIS	logistic management information system
LNCQ	Laboratoire national de contrôle de qualité (national quality control laboratory)
MOH	Ministry of Health
NEML	National Essential Medicine List
NGO	nongovernmental organization
PIHI	*Paquet d'Interventions à Haut Impact*
PNDS	Plan national de développement sanitaire (National Health Development Strategy)
PNLP	Programme National de Lutte contre le Paludisme
PNLS	Programme National de Lutte contre le SIDA
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SNIGS	National Health Information System
SOP	standard operating procedures
UNICEF	United Nations Children's Fund
USAID	US Agency for International Development
WHO	World Health Organization

ACKNOWLEDGMENTS

EXECUTIVE SUMMARY

Benin's National Health Development Strategy (*Plan national de développement sanitaire*, or PNDS) for 2009–2018 recognizes the centrality of a reliable supply of medicines and other health products in disease control for attainment of broader health goals such as Millennium Development Goals 4, 5, and 6. In fact, three specific objectives of the strategy are to (a) ensure universal access to health services and better quality of care for attainment of Millennium Development Objectives, (b) strengthen partnerships for health, and (c) improve governance and management of resources in the health sector. However, after seven years of implementing system strengthening interventions, progress on these objectives, at least within the public health supply system, has been minimal.

Results of this assessment show that 58% of resupply orders placed by *Dépôts Répartiteurs de Zone* (DRZs; zone distribution warehouses) at the *Centrale d'Achat des Médicaments Essentials* (CAME, the central medicines store) in the last 12 months were modified either because of stock-outs or inadequate stocks. This situation negatively affects medicine availability at health facility level and, of course, the population's access to medicines, given that DRZs serve as an intermediate supply source between CAME and the service delivery points (health facilities). In fact, the stock-out rate in health facilities was found to be high for two tracer essential medicines and malaria products. Similarly, between May and July 2015, stock-outs of malaria products at community health worker level varied from 10% to 16%. Identified supply chain capability weaknesses, which contribute to limited availability and access to medicines of the population, include poor warehousing and inventory management practices, acute shortage of qualified human resources, and lack of robust means of transportation. Additional weaknesses include inadequate pharmaceutical system governance, pharmacovigilance, and regulatory capabilities.

More generally, this assessment found a few supply chain functional areas having significant capability maturity, including medicine selection, quantification of needs, procurement management, and quality testing carried out by the national quality control laboratory. In addition, procurement and distribution management procedures have been printed; however, they have not been circulated for implementation.

However, the country's supply system reaps little benefit from these capabilities because of limitations attributable to the identified weaknesses. The health supply chain is only a part of a broader pharmaceutical management system that includes effective governance, regulation, pharmacovigilance, financing and logistics functions, which must be in harmony. It is therefore crucial that identified weaknesses are addressed to enable optimal system performance, which will result in sustained availability of safe, efficacious, and affordable medicines at service delivery points and thereby achieve many desired health outcomes.

This report presents information on the capability, maturity, and operational performance of Benin's health supply system, along with a strategic plan of interventions to address identified weaknesses that will allow reliable supply and use of medicines in the health system.

INTRODUCTION

The uninterrupted availability of essential medicines and other health commodities at all points of service delivery is fundamental to ensuring improved health outcomes. The medicine supply chain system in many countries is both a subsystem and a core function of the health system. When it functions properly, medicines and other health commodities, information, and capabilities are effectively managed for optimal health outcomes at the lowest possible total cost.

In an effort to improve the health status of the Beninese population, a priority activity included in the 2015 convention between the US Government, represented by its Agency for International Development (USAID), and the Benin Government, represented by the Ministry of Health (MOH), was to conduct a comprehensive assessment of the public health supply chain, focused on essential medicines that are associated with the package of low-cost, high-impact interventions (called *Paquet d'Interventions à Haut Impact,* or PIHI) identified at the national level.

The Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, with funding from USAID, undertook this assessment in close collaboration with and under the leadership of the MOH, represented by the National Health Products Supply Chain Committee (*Comité National d'Approvisionnement en Produits de Santé*, or CNAPS), which serves as the coordinating mechanism for government stakeholders, donors, and technical partners involved in the supply chain.

The assessment was organized in four phases (a) preassessment stakeholder consultations and refinement of scope of assessment; (b) data collection and analysis; (c) stakeholder review of results and formulation of recommendations for supply system strengthening; and (d) supply chain strategic planning. The first two phases were completed in April and August 2015, and the last two phases in October and November 2015.

As part of this assessment, the SIAPS team reviewed relevant and recent assessments conducted in the country, along with their recommendations and implementation status. In meetings with government health officials, donors, technical partners, and other key stakeholders, the SIAPS team designed a thorough data collection process based on an agreed methodology; managed and oversaw data collection at the central, regional, district, and community levels; and analyzed, interpreted, and presented the results to stakeholders for validation. Through a strategic planning workshop, stakeholders identified priority intervention areas, including opportunities for improved performance that could benefit from donor and government investments. The five-year national supply chain strategic plan developed as part of this process is annexed to this report.

BACKGROUND

According to article 65 of Decree no. 2012-272 of August 13, 2012, on the organization and functioning of the MOH, the National Directorate for Pharmacy and Laboratories (*Direction de la Pharmacie, du Medicament et des Explorations Diagnostiques*, or DPMED) has responsibility for formulation and implementation of the national medicine policy, including governance of procurement and supply of medicines and other health commodities in all public and private institutions in Benin.

Though the structure of public sector health supply chain in Benin follows the pyramidal health system, consisting of central, regional/zonal, district, and community levels, its functioning is complex and includes multiple actors who procure and distribute medicines and other health products. To improve the performance of the supply system, CNAPS was created in 2012.

CAME, which become a fully functional and independent agency in 1996, has the mandate to procure, warehouse, and ensure distribution of medicines and other health commodities in the public health sector. The agency is solely responsible for supplying the public health facilities and private nonprofits, as well as serving the private sector in a competitive environment. CAME administration is based in Cotonou and has three regional agencies located in Cotonou, Parakou, and Natitingou that supply all health facilities nationwide. CAME distributes products for six health programs: the National Malaria Control Program (*Programme National de Lutte contre le Paludisme*, PNLP), the National AIDS Program (*Programme National de Lutte contre le SIDA*, PNLS), Abidjan–Lagor Corridor Organization (*Organisation du Corridor Abidjan Lagos*), the Directorate of Mother and Child Health (*Direction de la Santé de la Mère et de l'Enfant*, DSME), the National Tuberculosis Program (*Programme National contre la Tuberculose*), and the United Nations Children's Fund (UNICEF).

Medicines purchased directly by CAME or by donors are stored at CAME's warehouses in Cotonou and later delivered to its regional depots in Parakou and Natitingou. Warehousing depots (DRZs) located in each of the 34 health zones receive their supplies from CAME regional depots. These DRZs in turn are responsible for resupply and transportation from CAME central and/or regional depots. Health facilities, hospitals, and health centers receive their supplies from district stores.

A list of health facilities provided by DPMED for sampling for this assessment included 802 facilities. In the public sector health facilities are categorized into two types, *Centres de santé d'Arrondissement* (arrondissement health centers) and *Centres de Santé de Commune* (commune health centers), which are managed by the *Comité de Gestion du Centre de Santé* (health center management committee, or COGECS) that work together with the Coordinating Physician of the Health Zone (*Medécin Coordinateur de la Zone Sanitaire*, or MCZS) to determine priorities. Lower levels in the periphery of the system are built around the *Unité Villageoise de Santé* (UVS), which includes the community health workers (CHWs).

Although some of the health programs are able to perform quantification estimates using consumption data, critical obstacles remain in the supply system, including lack of formal

agreements and poor communication between key supply chain partners and the programs, inadequate logistics management information system (LMIS), monitoring and supervision and tracking systems, and the need for reliable stock management softwares. Five different supply chain software applications (MEDISTOCK, PharMeg, Channel, Sage Saari, and Perfecto) are used in the country. However, no system is in place to track the distribution of free commodities, which contributes to poor data quality, shortages, stock-outs, and overstocks.

In 2012, 34% of funding allocated to health came from the government, 42% from spending by households, and 24% from donors and other partners.[1] Cost recovery is therefore an essential source of health funding in Benin, including from the sale of pharmaceuticals, which supports health facilities' operating costs.

In 2014, the DPMED published national guidelines for supply management of health products in the public and private nonprofit sectors.[2]

The mandate for managing medicines belongs solely to pharmacists, and no other official professional cadre is assigned the role of medicine management in the country. An acute shortage of pharmacists exists at all levels of the supply system, and throughout the supply chain it is commonplace to see human resources who do not have the necessary skill sets to perform key supply chain functions.

Road infrastructure in Benin is more mature than in other countries in the same income percentile, with a World Bank Logistics Performance Index of 2.85, which places it 83 of 155 countries surveyed in infrastructure: it is, in fact, the highest ranked low-income country for this metric. This should have a positive impact on the timeliness and cost of distribution across the country.

Private wholesalers manage about 40% of the total annual volume of medicines distributed in the country and valued in 2009 at about 24 billion CFA francs, which is about ten times the annual value of 60% total annual volume of medicines managed by CAME in the public sector.[3]

In general, illustrative functional weaknesses in Benin's public health supply system include unreliable quantification of needs, multiplicity of funding sources and a cumbersome tendering process, inadequate response to shortages of medicines and other health commodities, and poor implementation of the national medicine policy. These weaknesses contribute to the population's inadequate access to medicines.

---

[1] Musango L, Ota M. The critical role of health financing in progressing universal health coverage. *African Health Monitor* October 2015;20, available here.

[2] Directives nationales de gestion des approvisionnements en produits de santé dans le secteur public et privé à but non lucratif (2014).

[3] Plan national de développement sanitaire – PNDS, 2009-2018.

METHODOLOGY

Achievement of health outcomes relies on high-performing health supply chains that ensure access, availability, and affordability of health commodities. Supply chain performance management involves the activities an organization undertakes to ensure product availability, the monitoring of progress toward this goal, and the process for determining course corrections to reach this goal more effectively and efficiently.[4]

Monitoring and assessing supply chain capability maturity and performance provides the information necessary for an evidence-based decision-making process, providing managers, governments, and donors a platform to determine the most appropriate management actions and systems strengthening activities. This process ensures return on investment in terms of value for money and maximum impact on health outcomes.

To understand the current state of a supply chain, it is important to evaluate both capability maturity and performance, which define the ability of a health supply chain to ensure access and availability to health commodities.

- *Capability maturity*: Defines the current state of the infrastructure, processes, technology, and human resources across the functions of a supply chain

- *Performance*: Defines the current performance of a supply chain across supply chain functions, defined by key indicators

The National Supply Chain Assessment provides two tools to assess the current state of a supply chain's capability maturity and performance: the capability maturity model tool and the supply chain key performance indicators (KPIs) assessment.

The capability maturity model is a diagnostic tool that assesses the capability maturity of a supply chain at multiple levels, from the central level to service delivery points, and across the functional areas and cross-cutting organizational elements such as human resources and infrastructure. Capability is benchmarked against five established maturity levels, using a scale of 1–5, with 5 being the most mature (see figure 1). The maturity levels were adapted from private sector best practices to fit the public sector health context.

---

[4] McNamara C. 2012. http://managementhelp.org/organizationalperformance/index.htm
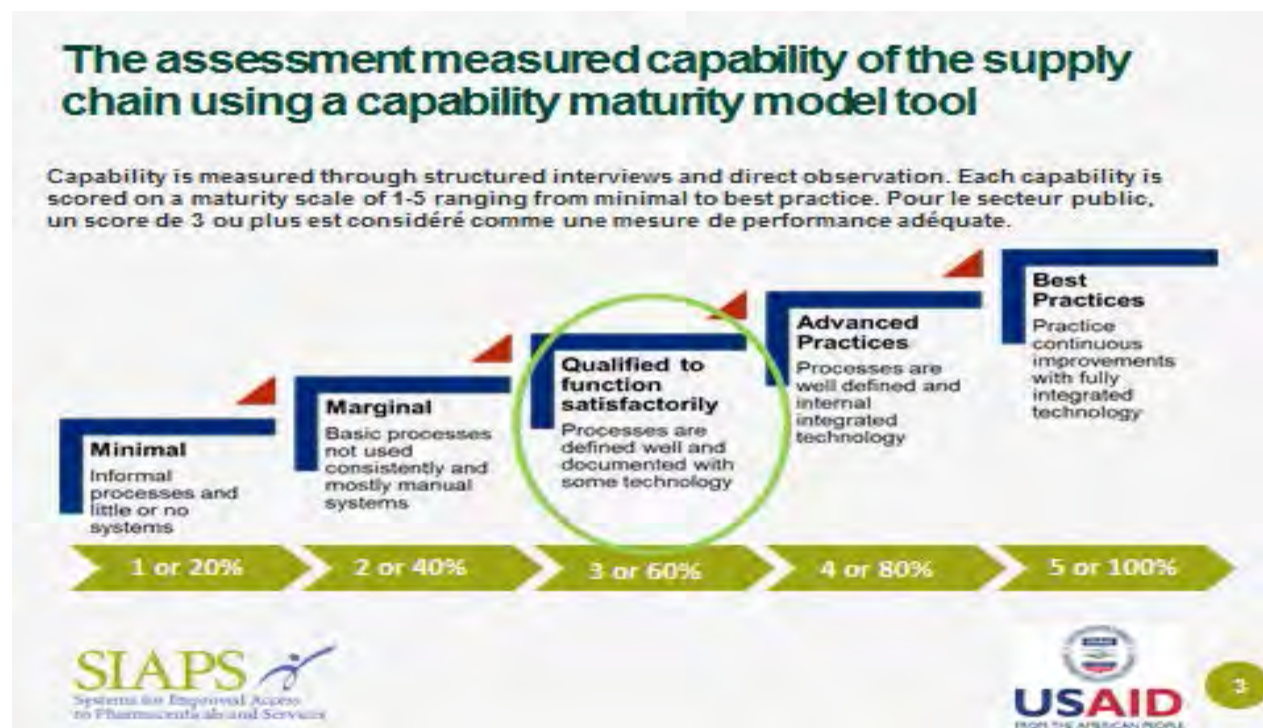
Figure 1: Supply chain capability maturity scale

The supply chain key performance indicators (KPIs) assessment is a set of core indicators that comprehensively measure the performance of a health supply chain, addressing both the overarching performance and the performance of the functional areas.

KPIs were agreed upon by the CNAPS planning committee for the assessment and included indicators for most supply chain functions shown in table 1. To assess important aspects identified and prioritized during assessment planning meetings with stakeholders in Benin, SIAPS supplemented the standard National Supply Chain Assessment questionnaires and forms with a series of new questions, which were shared with and validated by CNAPS.

In the final analysis of the results, information from other pertinent assessments conducted in Benin and from various technical reports and policy documents collected by the team was leveraged in the development of final results and conclusions.

Table 1. Key Performance Indicators to Measure Performance of the Supply Chain

Supply chain function	Key performance indicator
Product selection	Percentage of facilities with copy of essential medicines list
Human resources	Staff turnover rate
Facility information	Computer, internet, power, water and generator availability
Procurement	Top 10 suppliers by quantity procured
	Supplier fill rate
	Order lead time
Warehousing and inventory management	Types of inventory management tools used
	Stock card availability
	Stock accuracy
	Average months of stock on hand
	Percentage of orders by order type and supplier type
	Min-max level availability
	Order fill rate
	Percentage of orders modified by suppliers (reasons for modification)
	Percentage of key storage conditions met
Transportation	Transportation methods used
LMIS	Percentage of health facilities with LMIS reports available
	Percentage of health facilities submitting LMIS reports
	Percentage of facilities submitting LMIS reports on time
	Percentage of facilities submitting complete LMIS reports

SCOPE OF THE ASSESSMENT

The assessment analyzed the overall operational capacity and performance of the public health supply chain, highlighting main gaps and opportunities for improvement.

All functional areas of the supply chain were evaluated, including product selection, forecasting and supply planning (quantification), procurement, warehousing and inventory management, transportation and distribution, waste management, and laboratory issuing. Additional cross-cutting areas assessed included governance, regulation, and pharmacovigilance.

For each functional area an in-depth assessment was done of enabling factors such as processes and tools, management information systems, infrastructure and equipment, oversight and monitoring and evaluation, and human resources, as applicable. These aspects were evaluated at all levels of the public health supply chain system, particularly in pharmaceutical warehouses and health facilities at the central, departmental, zone, and peripheral levels, as well as at the level of CHWs.

Although the distribution networks of donor-funded programs were the main targets of the assessment, a broad view of the public supply chain system for essential medicines was taken in the analysis. For specific indicators of performance, a list of PIHI-related tracer medicines and other health commodities were identified in collaboration with CNAPS and MOH priority health programs, including maternal, newborn, and child health, family planning, malaria, and HIV medicines and other health commodities.

Sampling

Pharmaceutical warehouses/depots, health facilities, and CHWs managing essential medicines were sampled all along the supply chain (at central, departmental, zone, facility, and community levels), in an attempt to obtain a nationally representative sample.

SNIGS (the MOH National Health Information System unit), in collaboration with CNAPS and SIAPS, considered several sampling strategies and clusters. The main scenario proposed by SNIGS and SIAPS and adopted by CNAPS is summarized as follows:

- Central level: The data collectors evaluated the three CAME agencies in Cotonou, Natitingou, and Parakou; the two National Hospitals; and the national quality control laboratory (*Laboratoire national de contrôle de qualité*, LNCQ).

- Department level: All six health departments (Directions Départementales de la Santé, DDSs) were visited, including the five reference hospitals not in Cotonou.

- Zone level: For logistical purposes, one of two administrative departments within each health department was randomly selected (for a total of six administrative departments); within each administrative department, two health zones were randomly selected (for a

total of 12 of 34 zones in the country). Within each zone, the depot and the hospital were evaluated (for a total of 12 of 34 depots and a maximum of 12 of 27 zone hospitals).

- Peripheral level: Within each zone, 7 health centers were randomly selected (for a total of 84 of 769 centers); this calculation was based on a confidence interval of +/− 10% and a confidence level of 95%, including a mix of urban/rural, with lab or no lab, HIV site or not.

- Community level: For each health center selected, 5 CHWs were chosen at random (for a total of 420 CHWs); this calculation was based on a confidence interval of +/− 5% and a confidence level of 95%.

- Overall: Of 151 sampled facilities, 149 were visited; one DDS and one health center could not be visited because it was not an operational facility.

The health facilities included in the sample were public hospitals and health centers or faith-based facilities that had a special status granted by the government. Although the final results of the assessment are disaggregated by supply chain level, comparisons between geographical clusters (for example, between one department and another) should be avoided.

In addition to the entities managing medicines and other health commodities, other key informants (government, donors, partners, community stakeholders, and private wholesalers) were interviewed as part of the assessment to obtain additional qualitative information. The final sample of facilities and key informants is detailed in table 2.

Table 2. Sample of Facilities and Key Informants

Stakeholder-endorsed sampling scenario: Visit all six Health Departments in the country; for logistical purposes, randomly choose one of two administrative departments within each Health Department; randomly select 2 Health Zones within each administrative department (12 Zones in total).			
Level	**Sample**	**Comments**	**Additional qualitative interviews**
Central	3/3 CAME regional agencies	Cotonou, Natitingou, Parakou. In Cotonou, need to identify those CAME warehouses that manage tracer products	CAME Board - Chair CNAPS + subgroups MOH: DPMED, SNIGS, DNSP, DSME, PNLP, PNLS AMCES (faith-based wholesaler) Technical partners/nongovernmental organizations (NGOs): Africare, CRS, UNICEF, PADS
	2/2 National Hospitals	Cotonou	
	National Quality Control Laboratory	Cotonou	
Department	5/5 CHD (Reference Hospitals)	1 in each of the 5 health departments outside Cotonou (Atlantique health department)	Health Department Authority (Direction Departmentale de la Santé, or DDS)
Zone depots (DRZs)	12/34 DRZs	If 2 zones were selected in each of the 6 health departments, the total for the sample was 12 zones (of 34) in the country. Each zone has 1 depot.	Health Zone team (Equipe d'encadrement de zone sanitaire, or EEZS) headed by Médecin Coordonnateur de Zone
Zone hospitals	12/27 zone hospitals	Most zones have 1 hospital; some zones don't have a hospital. These hospitals could be public or faith-based (accredited by the government).	
Health Centers (CS)	84/769 CS	For CI of +/− 10% and CL of 95%, 7 CS per zone were selected, including a mix of urban/rural (or accessible/inaccessible), with lab or no lab, HIV site or not.	Management committees (COGECS)
Community	420/10,000+ CHWs	For CI of +/− 5%, 5 CHWs per CS were selected	Community NGOs (including those funded by USAID)
NB: SNIGS provided a list of health facilities by department and by zone; DNSP provided a list of CHWs; these two databases were correlated by a local consultant.			

FINDINGS

Overall Findings

Overall, the assessment shows that supply chain capabilities for management of warehousing, inventory, transportation, and pharmaceutical waste are below 50% (below 3 on a scale of 1 to 5; see figure 1).

Table 3. Overall Findings of National Supply Chain Assessment

Functional areas	Capability	KPI	
Overall	Not applicable	Stock card availability	79%
		Stock card up to date	82%
		Stock-out (6-month average)	21%
		Stock-out (day of visit)	14%
		Stock accuracy	83%
Product selection	85%	% of facilities with National Essential Medicine List	80%
Quantification	71%		
Procurement	83%	% deliveries that were urgent orders	19%
		Supplier fill rate (top 10 suppliers)	88%
		Average order lead time (order to first delivery) (top 10 suppliers)	192 days
Warehousing and inventory management	43%	Stock accuracy (CAME)	79%
		Stock-out rate (CAME)	3%
		Stocked according to plan (CAME)	8%
		Percentage of orders placed as unplanned or emergency (CAME–DRZ)	15%
		Percentage of orders placed as unplanned or emergency (DRZ–Health Facilities)	35%
		Order fill rate (CAME–DRZ)	73%
		Order fill rate (DRZ–Health Facilities)	66%
Transportation	48%	Percentage of orders delivered by established transport system (CAME–DRZ)	49%
		Percentage of orders delivered by established transport system (DRZ–Health Facilities)	5%
Waste management	43%	Percentage of facilities with incinerators	66%
Laboratory	84% (LNCQ only)	Not assessed	n/a
LMIS	Not assessed	On-time reporting rates (DSME, PNLP, PNLS)	32%
	Not assessed	Complete reporting rates (DSME, PNLP, PNLS)	79%
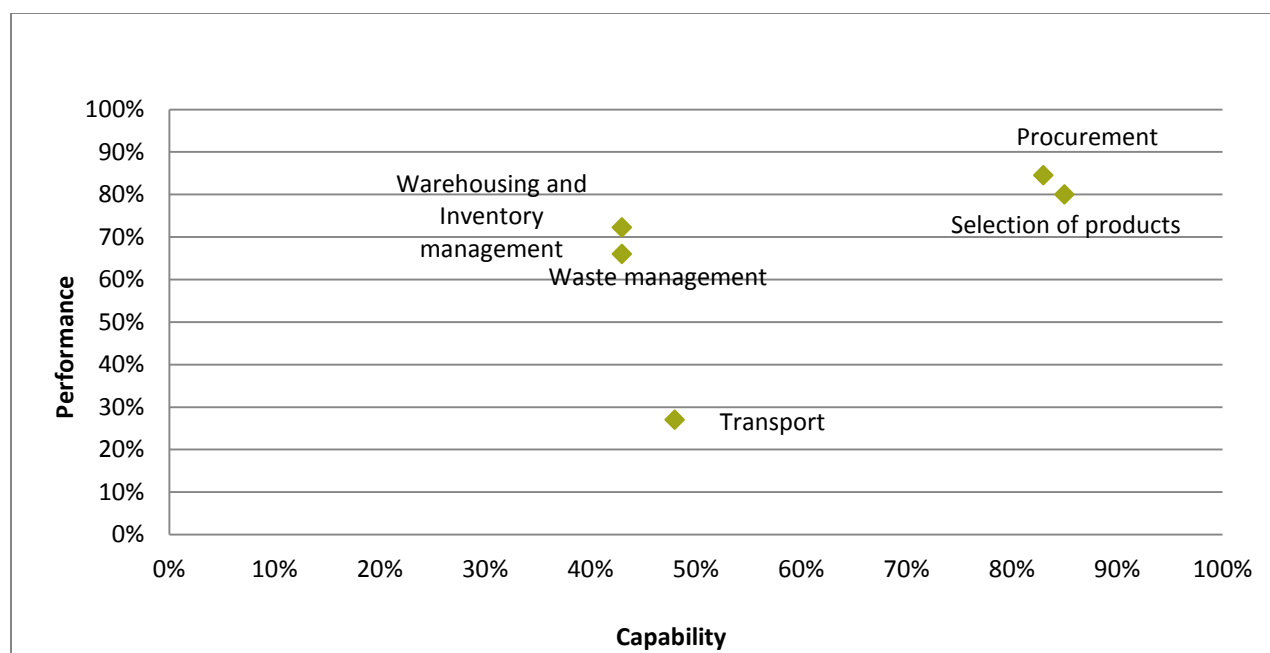
Note: Functional areas without both capability and performance are not included on this graph. No weighting was included, so each KPI was given equal weighting. In areas where there is only one KPI, performance reflects the score of the single KPI.

Figure 2: Public health supply chain capability and performance

Regarding KPIs, although stock card availability and recordkeeping practices were good, stock-out rates were high both on the day of visit (14%) and historically (21%). Although procurement processes are in place, order lead time was found to be high for some of the top 10 CAME suppliers. Though CAME has limited stock-outs, stock levels remain well below the recommended 6–12 months of stock. LMIS reporting is paper based and fragmented throughout the supply chain. This significantly affects the availability of data to inform order quantities and national-level forecasting.

Governance

DPMED is the regulatory authority of the pharmaceutical system, including leadership of procurement and supply of health products in collaboration with CNAPS.

Product Selection

Through an ad hoc committee, DPMED produces the National Essential Medicines list (NEML). About 20% of surveyed health centers (see figure 3) did not have a copy of NEML.
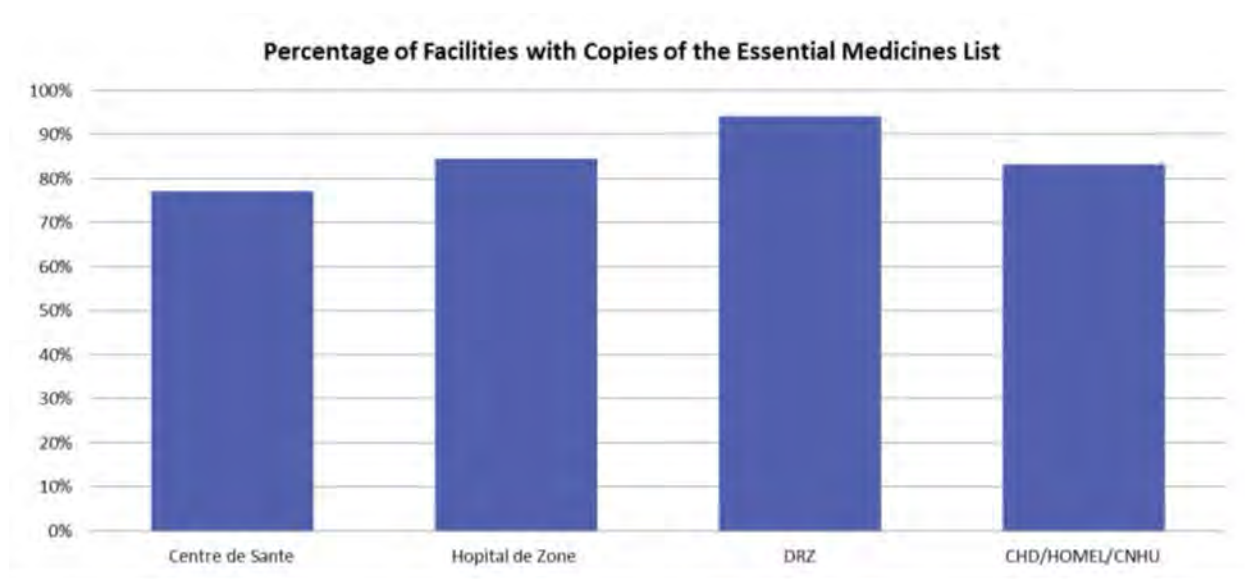
Figure 3: Percentage of facilities with copies of the NEML

Legal Framework

DPED's regulatory duties include the following:

- Coordinating and monitoring implementation of procurement and supply plans of each health program

- Participating in the board of directors of CAME

- Ensuring the quality of medicines used at all levels of the health system

- Ensuring regulatory approval of health products procured by competitive tender

CNAPS was created in March 2012 with the purpose of managing the quantification, planning, and monitoring of procurement and supply of all the medicines and medical supplies. CNAPS is made up of technical subgroups, decision makers, and partners; meets twice a year; and reports directly to the Minister of Health.

Specific duties of CNAPS include the following:

- Coordinating and validating national procedures for quantifying health products

- Defining the principles of quantification by level and type of product

- Monitoring quantification activities of technical committees of the different health programs

- Checking the quality of the data used for quantification purposes

- Quantifying health product needs for approval by the National Committee

- Developing a database for quantification of the products, which should be used by health programs

DPMED's Service for Registration, Statistics, and Quality Assurance registers all pharmaceutical products for use in the country. However, as of November 2015, the most recent list of registered medicines was dated 2013. DPMED's capacity to enforce the relevant laws, regulations, and policies has been challenged by limited human resources and budget. The legal framework for medicine registration is relatively complete, with a focus on generic medicines. A quality management manual or standard operating procedures (SOPs) for inspections are still to be implemented. In 2014, only 125 of 957 applications for product registration were approved, and in 2015, 6,300 pharmaceutical products were registered in the country.

Currently only nine technical staff work full time at the DPMED. Review of registration dossiers is done by a technical committee comprising the director of the DPMED, the heads of the Physicians Board and the Pharmacists Board, the head of the LNCQ, two university professors, and pharmacists from the referral hospital.

The number of LNCQ-tested samples increased from 108 cases in 2012 to 323 cases in 2014. The noncompliance sample tests were five cases in 2013 and two in 2014. Though capacity in equipment and analytical technical skills was improved thanks to USAID/PMI support, the current capacity is inadequate because of the increased work volume and aging equipment. For example, only 30% of the products procured through CAME is tested at delivery by NDQCL or at partner laboratories, and testing focuses on high-volume products such as antibiotics.

Procedures on good importation practice are included in the procurement and supply management guidelines. However, skilled inspectors are in short supply, and regulatory tools such as SOPs and guidelines are limited. In 2014, only 75 importation inspections were carried out, and good manufacturing practices inspection of facilities, warehouses, distributors, and other medicine suppliers including pharmacy outlets is also challenged.

Pharmaquick is the only local pharmaceutical manufacturer in the country, and it has received only one inspection visit since its creation in 1982. Owing to financial constraints inspection of international manufacturing sites is not done.

A law on the promotion and advertisement of medicinal products exists and is currently being updated. These materials as well as labels, patient leaflets, and treatment guidelines are approved by DPMED.

CAME has a service contract with the LNCQ for quality control testing of products purchased with CAME's funds. For these products, sampling is done following guidelines contained in CAME's quality assurance manual. For products purchased with the various health program funds, quality control sampling and testing are done following quality assurance guidelines

adopted by each donor. Therefore, ISO 17025–certified or World Health Organization (WHO)-prequalified quality control laboratories are regularly selected for donor-funded products. More systematic selection of samples is needed for products with previous failure history or samples that require tighter storage conditions. However, budget constraint was highlighted as a critical issue for sample tests, partly because CAME does not charge handling fees for storage.

Private sector wholesalers rely purely on certificates of analysis obtained from international manufacturers and immediately proceed to distribute products on arrival in the country.

Regarding medicine donations, there is a Ministry Order; however, criteria are undefined for accepting and refusing short-expiry donated medicines and managing the storage and distribution of donated medicines, particularly within the context of a fee-for-service public pharmaceutical sector.

The national Health Management Information System (SNIGS) generates data that are used at all levels of the health system for planning purposes. In addition, SNIGS provides standards and guidelines for data collection and reporting procedures, including the national health statistical report (*Annuaire des Statistiques Sanitaires*) that is published annually. However, SNIGS does not include data on procurement and supply of health products.

Pharmacovigilance

Benin has no written policy document and no pharmacovigilance center. No newsletter on medicine safety or any form of publicity on medicine safety has been distributed in the last six months. Although DPMED has a pharmacovigilance unit, it is not functional and does not have designated staff for pharmacovigilance activities. Findings from this assessment show that Benin's pharmacovigilance system does not fully meet all five minimum criteria recommended by WHO for a functional pharmacovigilance system (table 4). Plans are under way to produce a pharmacovigilance procedures manual in 2016.

The National Vaccination Agency has adverse event reporting forms in place for vaccinovigilance. However, collaboration with DPMED is weak.

Regarding signal generation and data management, an adverse drug reaction (ADR) reporting form exists, but awareness of the existence of the form and the importance of reporting on ADR is very low among health care workers. There is no national database for pharmacovigilance. DPMED uses Vigiflow to send ADR data to WHO's international medicines monitoring center in Uppsala, Sweden.

On risk assessment and evaluation, only one ADR report was received at DPMED in the 12-month period preceding November 2015. No active surveillance activities have been undertaken in the last five years.

Regarding risk management and communication, Benin relies heavily on medicine safety information from external sources; products withdrawn from other international markets for

safety and quality reasons are subsequently withdrawn from the Beninese market. For example, collaboration with the French agency for safety of health products allowed DPMED to take a regulatory action involving removal of a batch of Fervex from the market in 2013.

Table 4. WHO Minimum Requirements for Functional Pharmacovigilance Systems

WHO minimum requirements for functional pharmacovigilance systems	Benin
A national pharmacovigilance center with designated staff (at least one full time); stable basic funding; clear mandates; well-defined structures and roles; and collaboration with the WHO Programme for International Drug Monitoring	Partially
The existence of a national spontaneous reporting system with a national individual case safety report (ICSR) form, i.e., an ADR reporting form	Partially
A national database or system for collating and managing ADR reports	No
A national ADR or pharmacovigilance advisory committee able to provide technical assistance on causality assessment, risk assessment, risk management, case investigation and, where necessary, crisis management including crisis communication	No
A clear communication strategy for routine communication and crises communication	No

Overview of Distribution Networks of Health Programs

Malaria Program Distribution Network
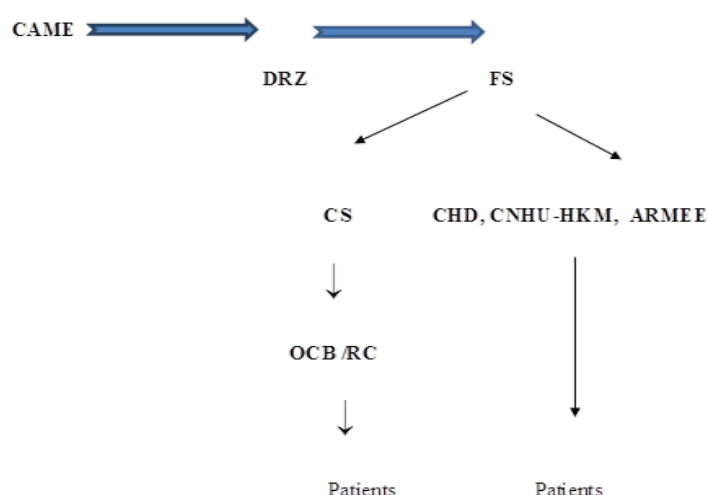
Figure 4: Official malaria program distribution network

The National Malaria Control Program (*Programme National de Lutte contre le Paludisme*, PNLP) is responsible for the supply of malaria medicines and other commodities in Benin. The PNLP is also responsible for the quantification and procurement of malaria products, excluding products used by CHWs. Key stakeholders in the malaria supply chain include the PNLP and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). Malaria products are procured by several different entities, including the Global Fund, USAID/PMI, UNICEF, the government of Benin, and the World Bank. CAME is the primary central-level storage facility for all procured malaria products. However, products acquired by the Global Fund for use at community level do not always follow the official malaria products distribution network (figure 4). Some Global Fund–procured malaria products do not go through health centers before being distributed to the CHWs. The assessment revealed that malaria product distribution does not follow the official network shown in figure 4; rather, the distribution is as shown in figure 5.
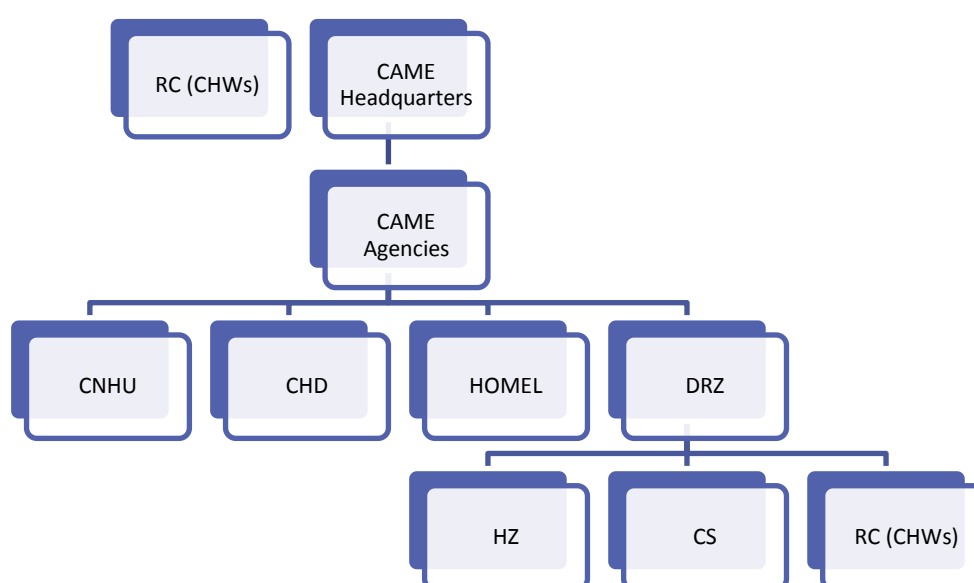
Note: CNHU = Centre National Hospitalier et Universitaire; CHD = Centre Hospitalier Départemental; HOMEL = Hôpital de la Mère et de l'Enfant Lagune; HZ = Hôpital de Zone.

Figure 5: Actual malaria program distribution network

HIV and AIDS Control Program Distribution Network

Distribution network of HIV commodities to treatment sites, zonal warehouses (DRZs) and Information and Counseling Centers (CIPEC)
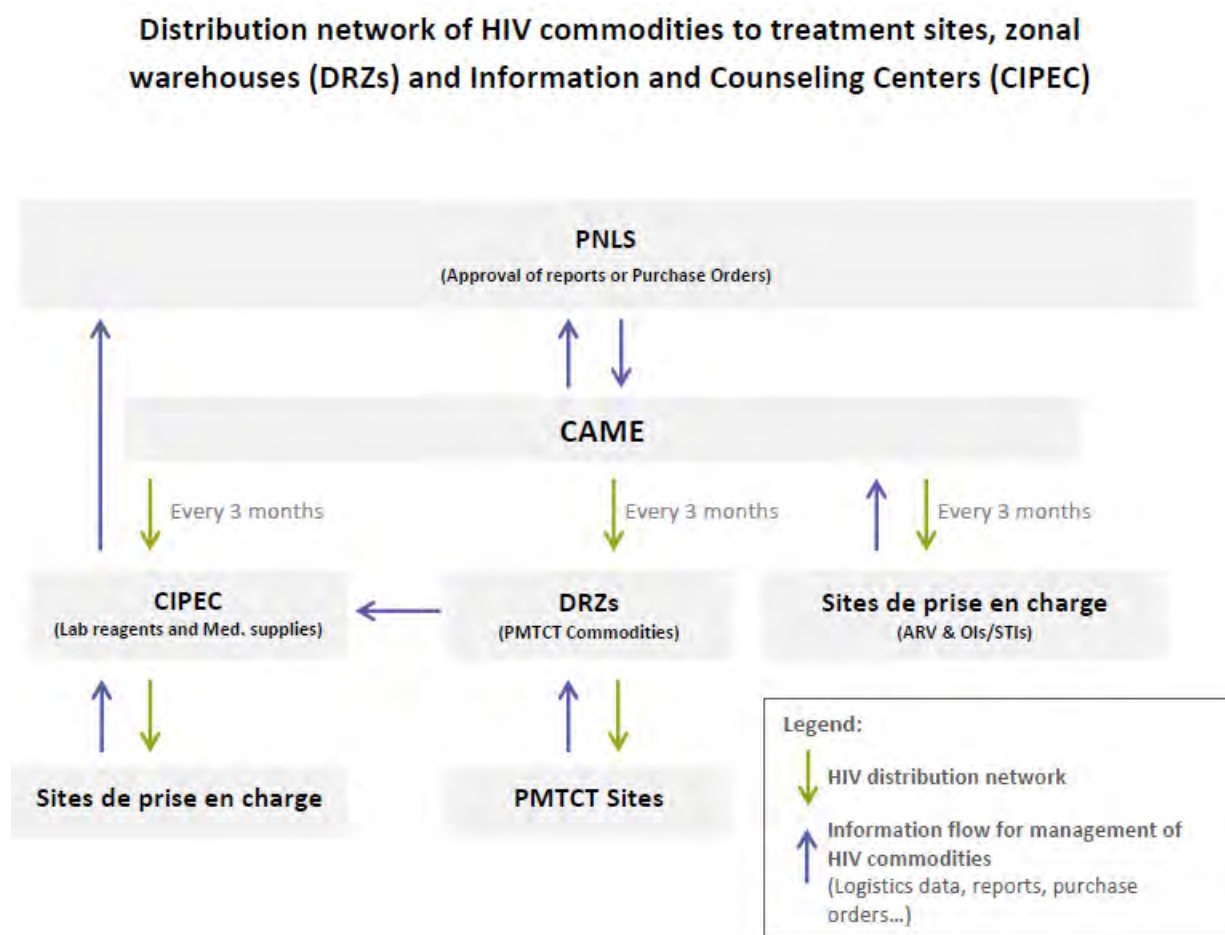
Figure 6: HIV product distribution network

The National AIDS Control Program (*Programme National de Lutte contre le SIDA*, PNLS) is responsible for the HIV and AIDS commodities supply chain in Benin. The PNLS therefore is responsible for the quantification of HIV/AIDS products. Before February 2014, CAME procured antiretrovirals (ARVs) based on quantification done by PNLS; however, after February 2014, the Global Fund switched to using its Pooled Procurement Mechanism, so CAME no longer procures. There are two suppliers: the Global Fund Pooled Procurement Mechanism for ARVs and reagents, and the IDA Foundation for medicines to fight opportunistic infections and medical supplies.

Key stakeholders in the HIV/AIDS supply chain include the government and the Global Fund. CAME is the primary central-level storage facility for all HIV/AIDS products. According to official distribution policy, CAME delivers commodities directly to antiretroviral treatment sites (figure 6). The zone depots (DRZs) are not involved in the distribution of HIV commodities, with the exception of products for prevention of mother-to-child transmission.

Maternal and Child Health Distribution Network
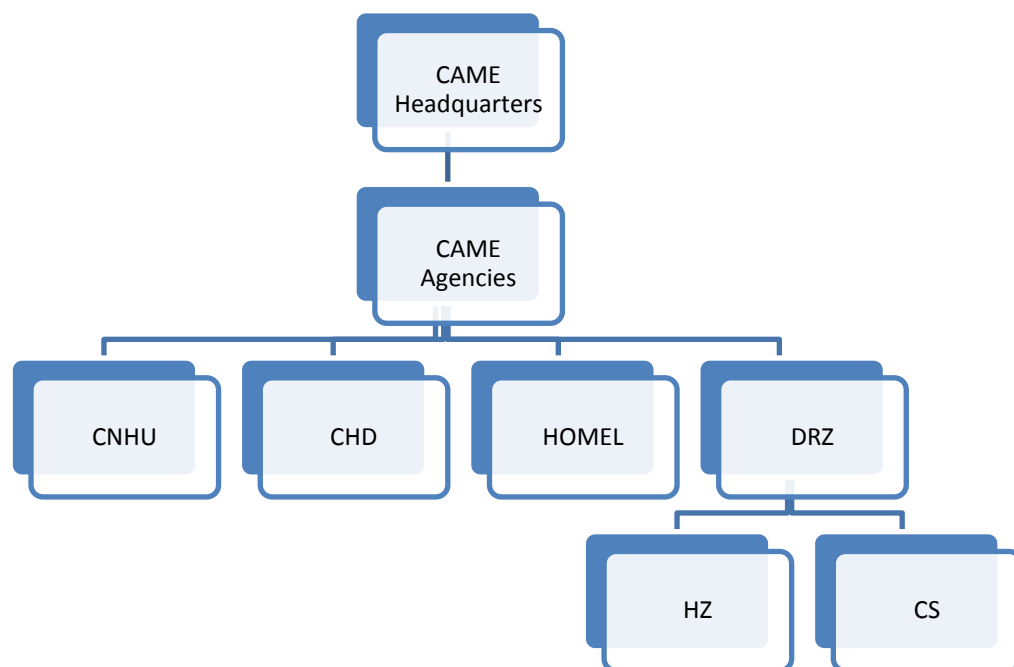
Note: CNHU = Centre National Hospitalier et Universitaire; CHD = Centre Hospitalier Départemental; HOMEL = Hôpital de la Mère et de l'Enfant Lagune; HZ = Hôpital de Zone.

Figure 7: Maternal and child health distribution network

The Directorate of Maternal and Child Health (*Direction de la Santé de la Mère et de l'Enfant*, DSME) is responsible for the maternal, child health, and family planning supply chain in Benin. The DSME therefore has responsibility for quantification of maternal, child health, and family planning products. Key stakeholders in this supply network are the government, UNICEF, United Nations Population Fund, USAID, and *Organisation Ouest Africaine de la Santé*. The products supplied in this network are procured by several different entities, including CAME and several different stakeholders. As for the other programs, CAME is the primary central-level storage facility for all DSME products. CAME then distributes these products to DRZs and central-level health facilities (figure 7).

Overview of Public Sector Health Supply Chain
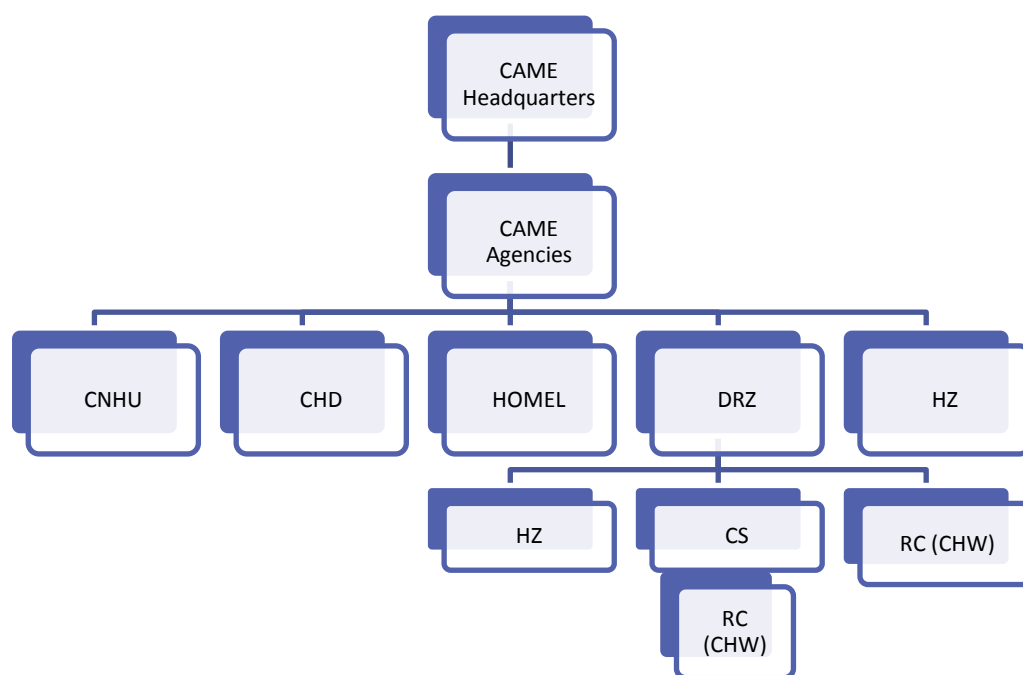
Note: CNHU = Centre National Hospitalier et Universitaire; CHD = Centre Hospitalier Départemental;
HOMEL = Hôpital de la Mère et de l'Enfant Lagune; HZ = Hôpital de Zone.

Figure 8: Benin public sector health supply chain

The public sector health supply chain begins at CAME, the central medical store, and flows through the DRZs to patient-serving facilities. CAME has three regional branches and a headquarters. These branches service the health departments (DDS) within their geographic territories. For most programs, the DRZ collects products from CAME and then distributes them to the health facilities within its health zone, including the zonal hospitals and CSs (figure 8). The HIV program distributes products directly to health facilities, while CHWs who provide basic services to the population typically procure their products from the CS.

With the exception of reference hospitals, zonal depots and health facilities have limited access by tarred road (figure 9).

Access Road Type by Supply Chain Level
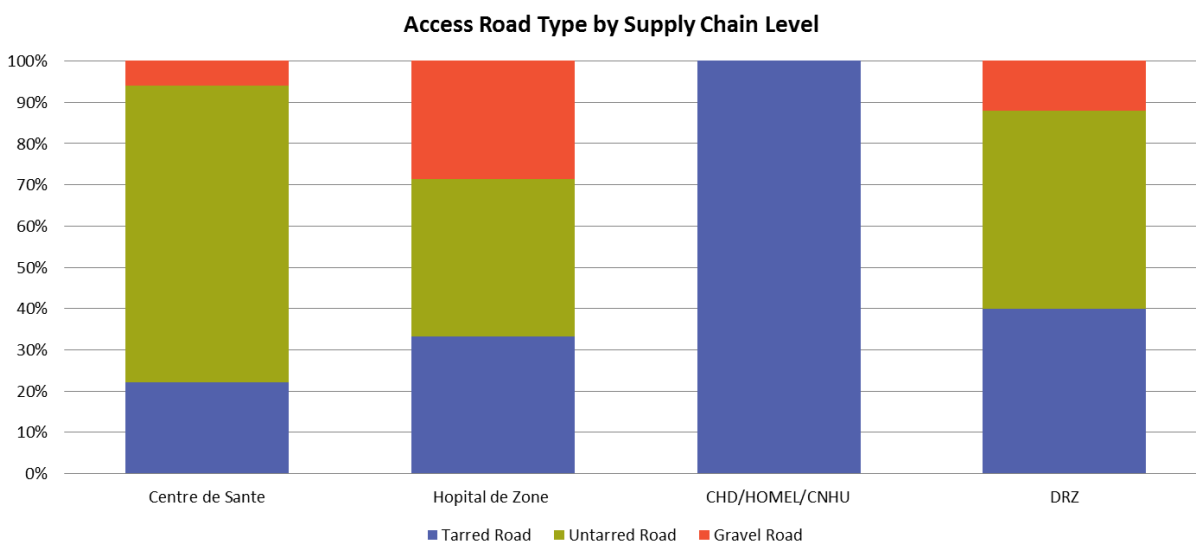
Figure 9: Access road type by supply chain level

Internet availability is limited throughout the supply chain, though DRZs and reference hospitals all have access to computers (figure 10).

Computer & Internet Availability by Facility Type
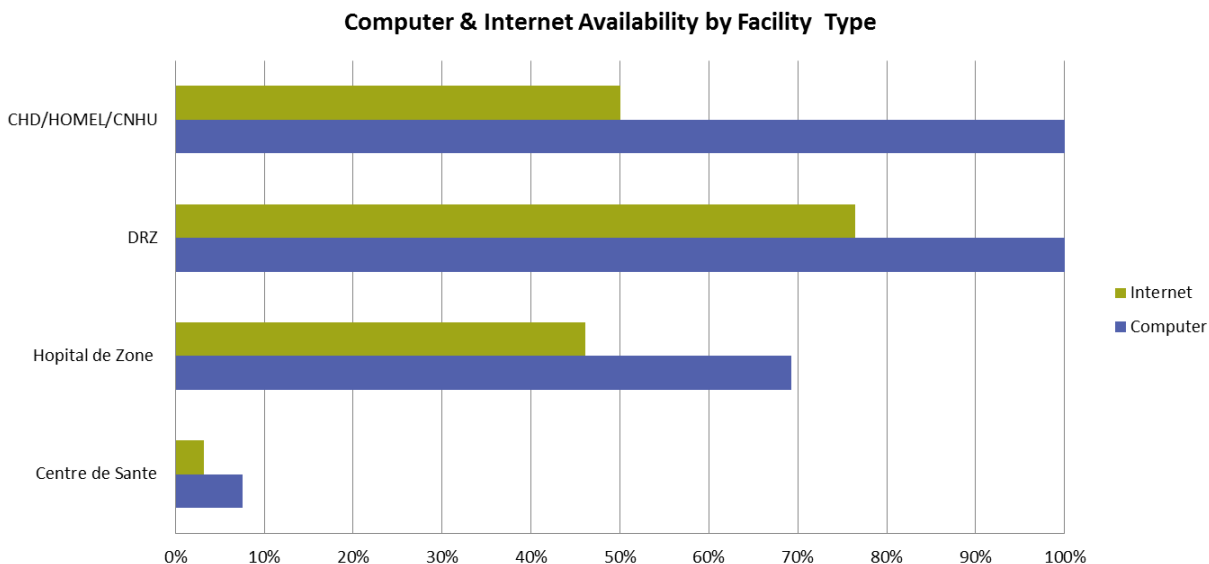
Figure 10: Availability of Internet by facility type

Human resources for supply chain management are limited at all levels of the supply system. On average, less than one staff person per health center was available, indicating significant human resources shortages (table 5).

Table 5. Human Resources for Supply Chain Management

Facility type	Pharmacist	Storekeeper	Nurse	Midwife
Health center	0.0	0.4	0.8	0.2
CHD	0.8	1.3	0.5	0.0
DRZ	0.0	1.1	0.0	0.0
Hospital	2.0	1.5	0.5	0.5
Zone hospital	0.0	1.0	0.9	0.2
Total	0.1	0.6	0.7	0.2

Note: CHD = Centre Hospitalier Départemental (Department Health Center).

Supply chain human resource turnover is high at health centers for storekeepers, nurses, and midwives (table 6).

Table 6. Turnover Rate of Human Resources for Supply Chain Management

| Facility type	Pharmacist	Storekeeper	Nurse	Midwife
Health center	0%	19%	14%	26%
Zone hospital	n/a	15%	8%	50%
DRZ	n/a	5%		
CHD/HOMEL/CNHU	0%	13%	0%	0%
Total	0%	14%	13%	27%

Note: CHD = Centre Hospitalier Départemental (Department Health Center); HOMEL = Maternal and Child Health Hospital; CNHU = Centre National Hospitalier Universitaire (National University Health Center).

Findings by Supply Chain Functional Area

Results in different supply chain functional areas are presented by health programs and by different levels of the public sector supply chain: CAME and its regional depots, DRZs, health facilities, and community level.

Health Programs

Health Program Quantification

Overall key quantification capabilities for health programs are high (figure 11); however, several weaknesses in the process exist, which are summarized in table 7.
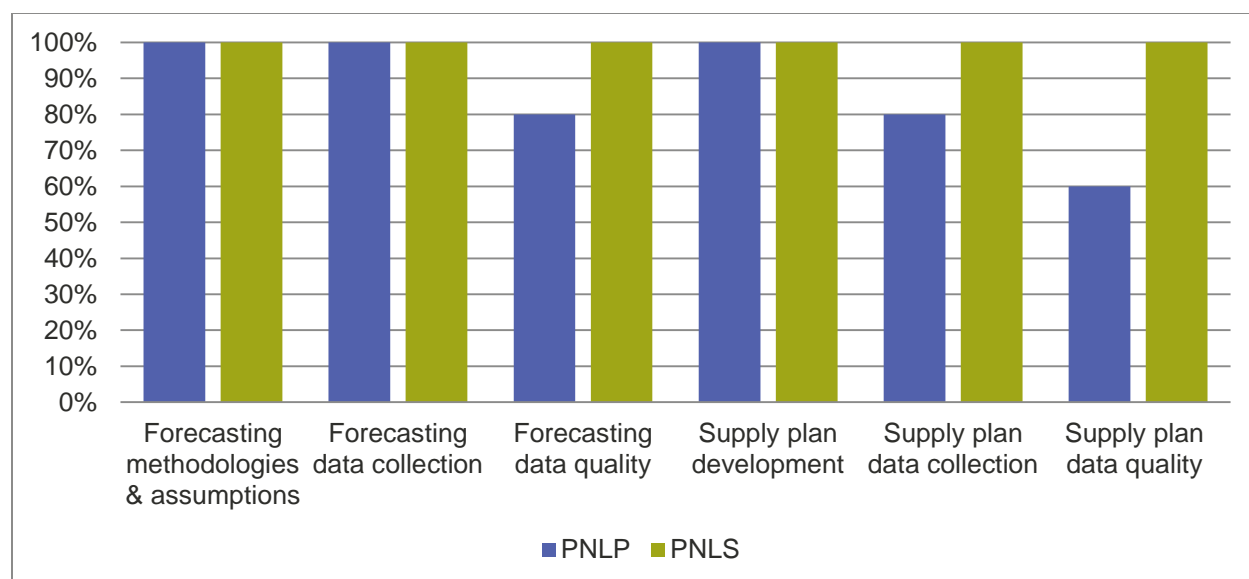
Figure 11: Quantification capability of HIV (PNLS) and malaria (PNLS) programs

Although CAME has strong processes for forecasting, a lack of consumption data limits its capability.

Table 7. Quantification Capability of Health Programs

Capability	Comments
Methodologies and assumptions for forecasting needs	Programs use multiple methodologies during the forecasting process although data are not always complete or of good enough quality to fully inform required assumptions. The multiple methodologies are compared to come to the final forecast quantities.
Data collection process for forecasting needs	Consumption and product pricing data are regularly available. Consumption data are transferred from the health facility level on paper and aggregated into an electronic software program at the health zone level.
Data quality for forecasting needs	Data needed for quantification is consistently available through LMISs but are not necessarily always complete because of incomplete levels of LMIS report submission. Pricing data are consistently available as well.
Development and update of supply plan	Although there is a process in place to create supply plans, updates are irregular, happening only once annually.
Data collection for planning procurement	Processes for collecting data for supply planning are in place. Data are available electronically but must be aggregated at lower levels of the system from paper-based records.
Quality of data used for procurement planning	Supply planning data quality is strong with the use of electronically managed procurement records.

Health Program Procurement

Key procurement capabilities are high for both PNLP and PNLS (figure 12 and table 8).
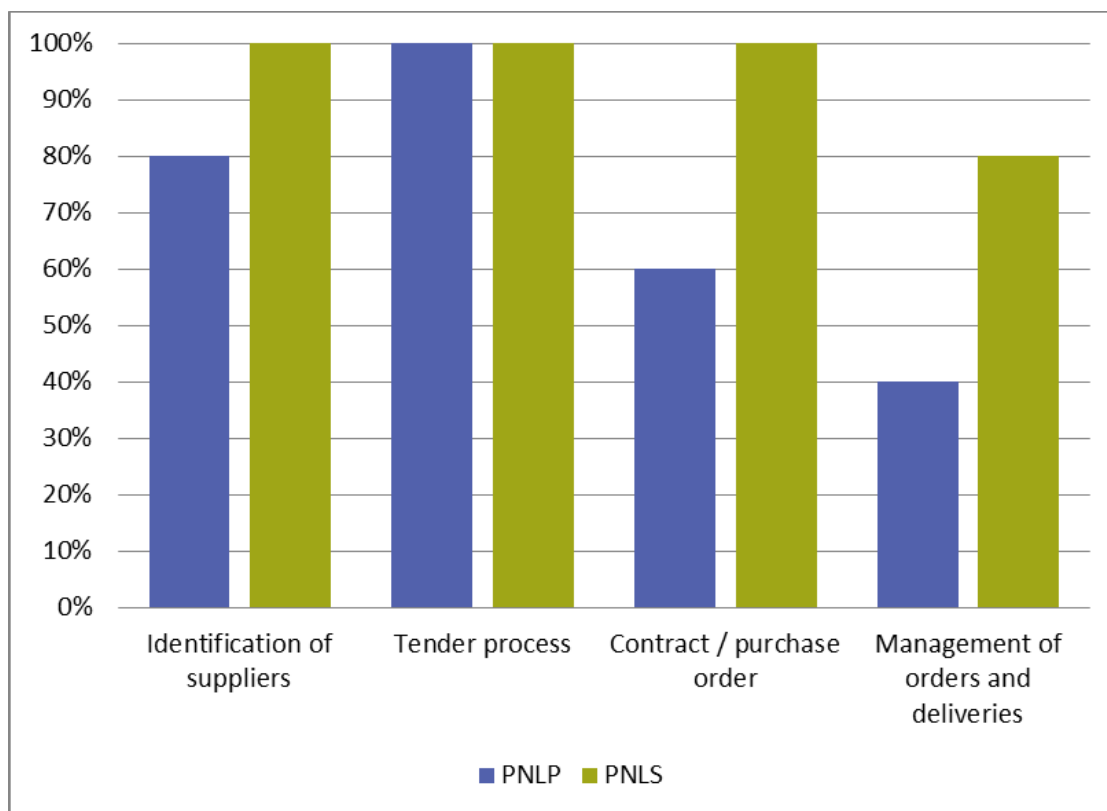

Figure 12: Procurement capability of HIV (PNLS) and malaria (PNLP) programs

Table 8. Procurement Capabilities of HIV and Malaria Programs

| Capability	PNLP	PNLS
Identification of suppliers	For the 20% managed by PNLP, the public procurement code is followed.	This process is managed by partners.
Tender process	This process is managed by partners.	This process is managed by partners.
Contract / purchase order	Information is kept on purchase orders.	Information is kept on purchase orders.
Management of orders and deliveries	There is no communication with suppliers. Partners of PNLP are responsible for management of orders and deliveries of products they procure. PNLP does not evaluate the quality of service of its suppliers.	CAME is responsible for management of orders and deliveries, and then forwards documents to PNLS. Products procured with national budget follow CAME's procedures. An order is placed and follow-up for deliveries is made with CAME. PNLS evaluates the quality of service of its suppliers.

Central Medical Store (CAME)
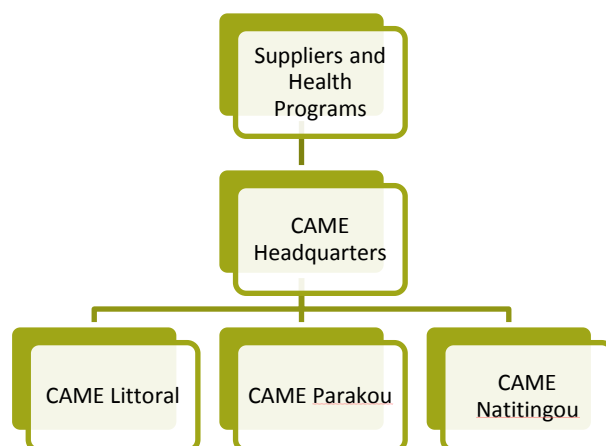
Figure 13: CAME supply network

CAME is an autonomous entity responsible for the warehousing and distribution of public health commodities in Benin. It consists of a headquarters and three regional agencies that store and distribute products to clients (figure 13). CAME has 13 different contracts with health programs that guide its warehousing and distribution operations. It has technical and support units that manage its operations, including Procurement, Quality Assurance, Promotion of Essential Medicines (CAME-client relationship), Finance, Administration, Materials, Human Resources, Legal, and IT.

CAME Quantification

CAME does not receive LMIS data from lower levels of the supply chain aside from health program distribution reports. Quantification is done based on the amount sold to different customers in a context where lower-level officials frequently experience stock-outs or overstocks partly because lower-level managers do not always take into account their average monthly consumptions before placing resupply orders. Periods of stock-outs at the lower levels are not known, sometimes leading to inaccurate estimates of order quantities.

CAME Procurement

CAME operates primarily on its own funds. However, its recovery rate with some of its major customers is low, sometimes resulting in financial constraint that limits procurement quantities. When multiple orders are made, procurement cost is higher, the profit margin decreases, and obviously limits funds available to place new orders with a consequent lack of safety stock in the supply system.

CAME procures essential medicines and other products from a diverse set of suppliers, as evidenced by purchases from 44 suppliers in 2014. Its procurement has significantly improved with the help of a seconded Global Fund consultant. CAME conducts a tendering process for commodity orders from prequalified suppliers twice a year. Staggered deliveries are negotiated

during contracting to ensure the warehouse is not overloaded with products. Supplier performance is closely monitored. The value of purchase orders placed in 2014 with the top 10 suppliers represents 81.7% of purchases delivered (table 9).

Table 9: Top Ten CAME Suppliers in 2014

Supplier	Annual value of purchases (CFA francs)
PHARMAQUICK	5,697,562,370
PLANETPHARMA	3,030,171,606
PHARMANOVA	1,050,344,464
SPRUKFIELD	934,484,950
MULTI-G	803,132,565
LDI	759,662,210
SOBECI	570,872,525
ETHICON	506,672,775
NCPC	473,066,363
EQUEER	454,742,204

CAME's capability is high, with best practice capability levels for most key capabilities (table 10).

Table 10. CAME Procurement and Supply Chain Management Capabilities

Capability		Comments
Preliminary selection of suppliers	100%	With the help of the consultant CAME launched a call for submission and proceeded to the preselection of suppliers according to criteria validated by its Management Committee: • A screening list of products and manufacturers • A model tender document • A manual of procedures for purchasing and quality assurance
Tender process	100%	Detailed SOPs are in place for the tendering process. Tender includes terms and conditions that are enforced.
Bid evaluation (tender adjudication)	80%	Technical analysis of bids: document on special clauses, technical specifications, price and quantities list, Forms A and B, Code of ethics. Detailed review of tenders: Review of technical conformity of the products presented by each bidder, comparison of prices by product.
Contracting / Purchase order management	80%	All laws related to disputes and different transactions, as well supplier contracts, are included in the tender documents. CAME has a legal department that deals with these aspects of the tender process.
Management of purchase orders and deliveries	100%	The procurement process is documented and transparent. The Purchasing Department monitors the process up to delivery. A process for improvement of supplier performance exists.
Internal controls	100%	An internal controller with precise terms of reference controls and assesses risks to effective decision making.

Capability		Comments
In-bound transportation	60%	Shipments are typically C and D incoterms, but they are well managed from order to delivery. Freight cost savings are not considered in the decisions surrounding shipment modes.
Management of supplier performance	80%	A mechanism of supplier rating is in place and used for future purchases.

Although procurement capabilities are high, CAME still faces several challenges. Overall supplier fill rate is high at 97%, while some of the top 10 suppliers had challenges fulfilling orders in 2014 (figure 14).
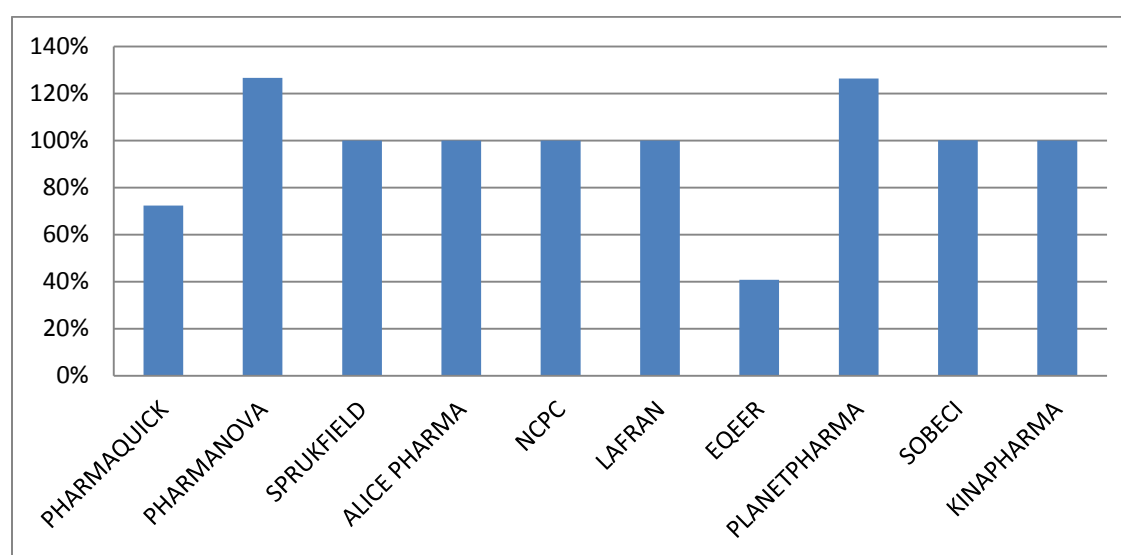

Figure 14: CAME top-10 supplier fill rate in 2014

Although supplier fill rate is relatively high for high-volume suppliers, average order lead time can take up to 384 days. Order lead time is calculated as the average time between when an order is placed and first delivery at CAME. Most of the top 10 suppliers have long lead times, and 80% of suppliers' lead time is above 100 days. The supplier with the highest value, Pharmaquik, has an average lead time of 239 days and a supplier fill rate of 72% (figures 14 and 15). Limited planned delivery date data are available.
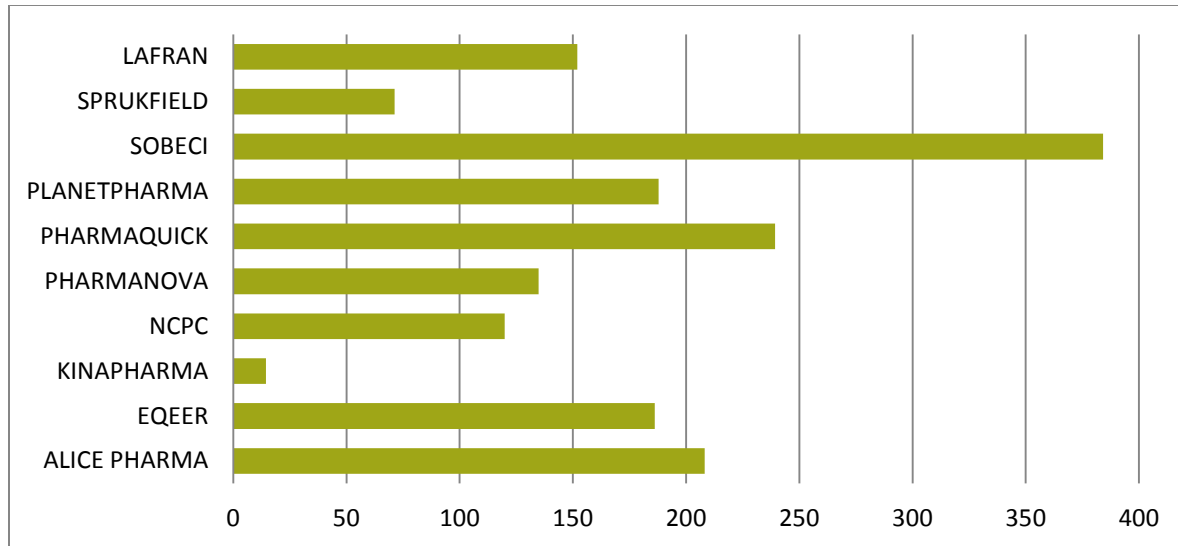
Figure 15: CAME average order lead time by supplier

Warehousing, Inventory Management, and Transportation

Although some capabilities are strong at CAME, challenges exist with key processes and infrastructure (figure 16).
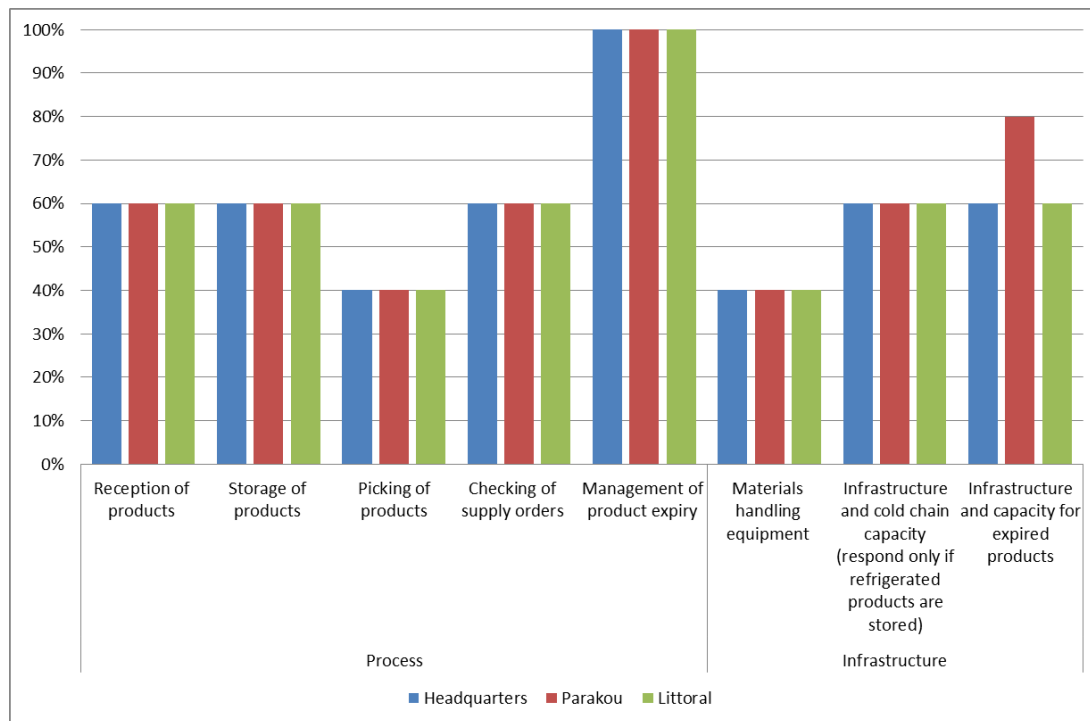

Figure 16: CAME warehousing capability

CAME's storage capacity is insufficient, meaning it has to lease additional private storage space. Moreover, all warehouses do not meet the recommended standards. CAME's warehouses have no product location management software, and high-storage locations have no electric materials-handling equipment for handling of products. CAME warehousing and inventory management capability at all its warehouses located in Cotonou, Littoral, and Parakou is shown in table 11.

Table 11. CAME Warehousing and Inventory Management Capability

Capability	Comments
Reception of products	Products are received at CAME according to procedures described in a manual. Product quantities are verified against the preshipment notices. Reception is carried out by a committee composed of staff of CAME, relevant health program, and supplier's local representative that delivered the products. Each product batch received has its stock card. Received products are entered into inventory management software using their respective batch numbers.
Storage of products	Products have designated locations within the CAME warehouses. These locations are static because no warehouse management system is in place that can generate bin numbers based on warehouse space availability. First-expiry, first-out (FEFO) is respected, and stock is rotated each time product is put away.
Picking of products	No pick tickets are in place to help warehouse staff pick products for orders.
Checking of supply orders	Orders are checked 100% of the time, but there is no dispatch area where a secondary check is performed.
Management of product expiry	FEFO is rigorously followed. Products approaching their expiry dates are used first.
Materials handling equipment	Electric handling equipment doesn't exist.
Infrastructure and capacity of the cold chain	Cold storage capacity is not sufficient to hold large shipments. However, additional cold storage space is available in rented private warehouses outside CAME premises.
Infrastructure and capacity for expired products	There is no dedicated warehouse available for expired products.

Stock-out rates at the three CAME warehouses visited were low from January to June 2015 (figure 17); however, stock accuracy assessed by tracer products was low (table 12).
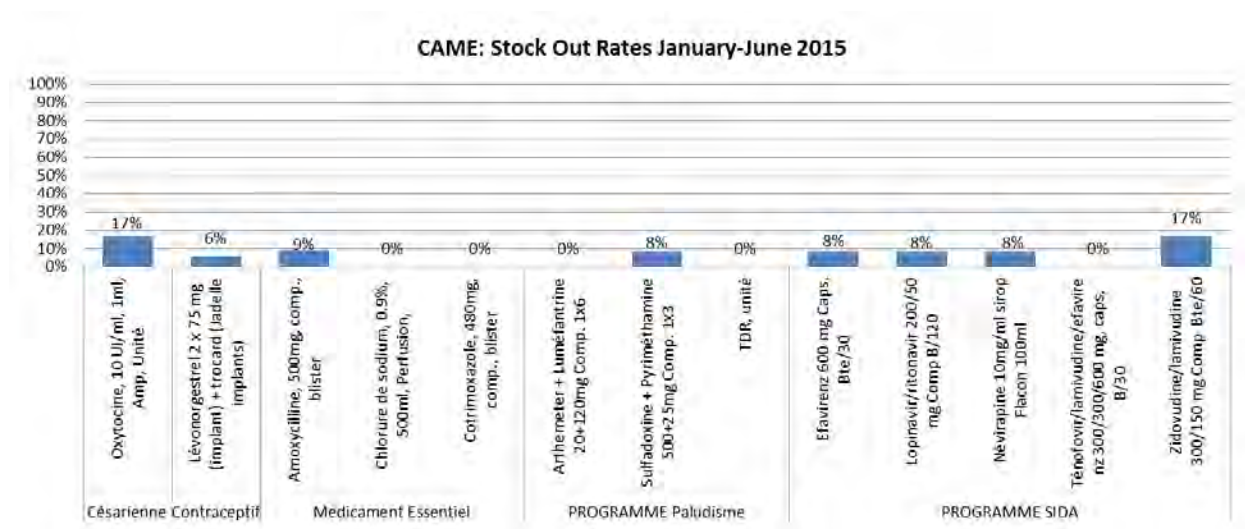
Figure 17: CAME stock-out rates, January–June 2015

Table 12. Tracer Product Stock-Out Rate and Stock Accuracy

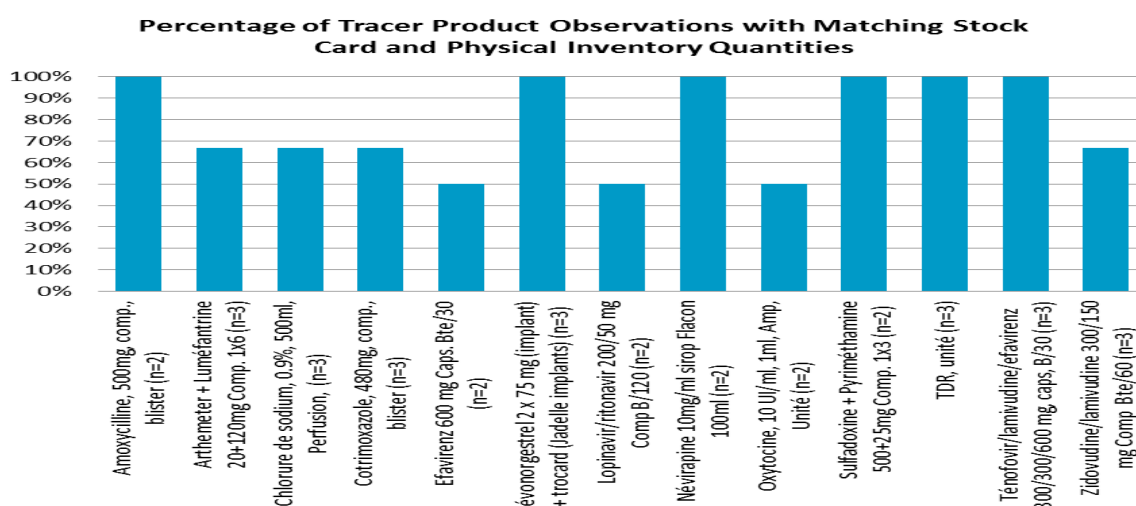| Tracer product	Stock-out rate	Stock accuracy (figure 18)
Oxytocine, 10 UI/ml	17%	50%
Zidovudine/lamivudine 300/150 mg	17%	67%
Efavirenz 600 mg	8%	50%

Figure 18: Stock accuracy by tracer products

Although stock-out rates for most products are low, stocks of tracer commodities were well below the six-month recommended minimum stock levels (figure 19).
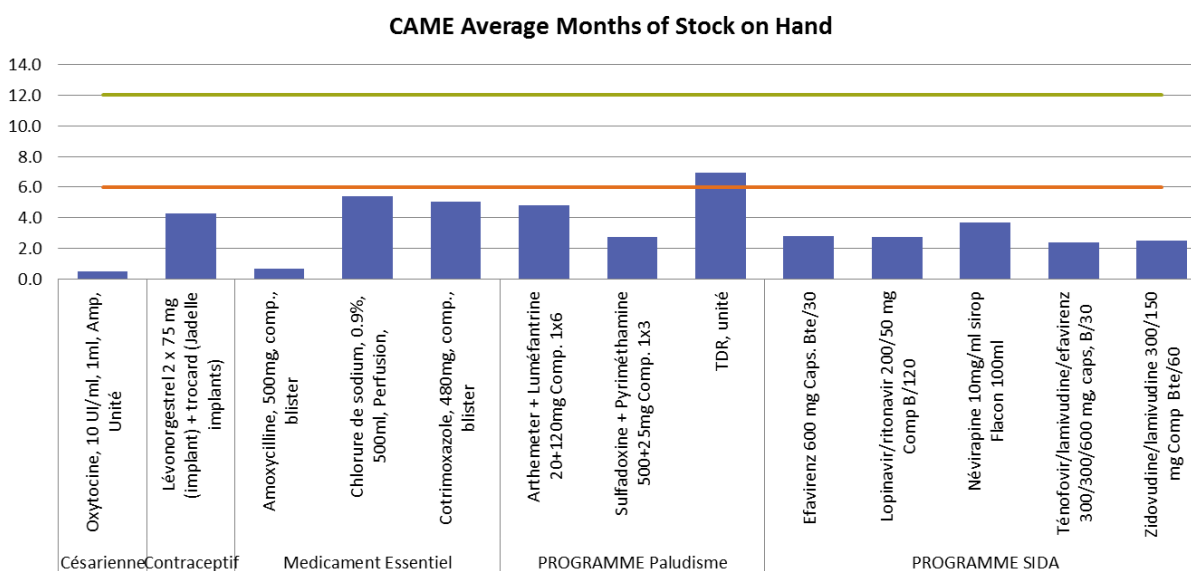
CAME Average Months of Stock on Hand

Figure 19: CAME average months of stock on hand

Data collected at the DRZ level confirm the use of CAME as the primary supplier for products, accounting for 96% of orders (figure 20).

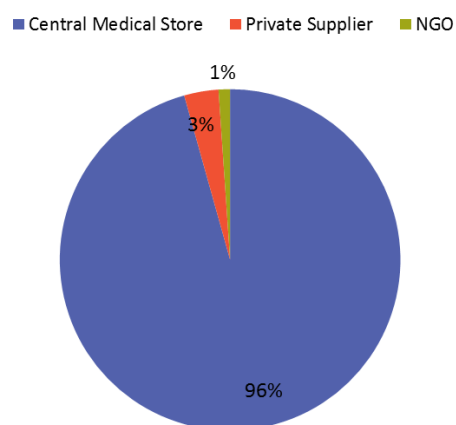**Percentage of Orders by Supplier Type**

■ Central Medical Store ■ Private Supplier ■ NGO
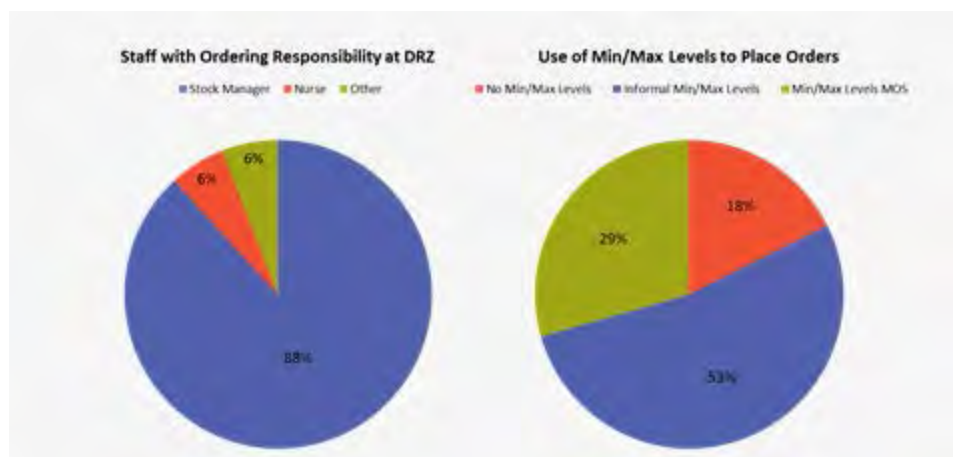

Figure 20: Suppliers of DRZs

Figure 21: DRZ staff with ordering responsibility and use of min/max stock levels to place orders

At the DRZs, stock managers place orders using established minimum and maximum stock levels only 29% of the time (figure 21).

CAME does not have the infrastructure and capability needed for a robust transportation system to deliver products to its clients (table 13).

Table 13. CAME Transportation Capability

Capability	Score	Comments
Capacity to satisfy demand	20%	CAME does not have its own transport fleet. This service is outsourced. Vehicles are sometimes in bad working condition, resulting in frequent delays in delivery of shipments.
Vehicle management	100%	Although an adequate fleet is not in place, the fleet that exists is well maintained.
Outbound transport	40%	No transportation schedule or plan is in place. Product delivery is primarily response-based.
Temperature control management	60%	CAME does not have its own transport fleet. It uses rented delivery vans that meet minimum temperature control standards.
Traceability of outbound shipments	60%	Manual system in place to track products throughout the transport chain. Because the system is manual, CAME sometimes finds errors that it has to reconcile with clients.
Key performance indicators	100%	A quarterly set of indicators is used in the transport system.

Because of limited transportation capability, DRZs typically collect products from CAME (figure 22).

Transportation Types Used by DRZ To Collect Products

Public Transport 17%

Moto 23%

Site Vehicle 53%

Personal Vehicle 6%

Partner Vehicle 6%
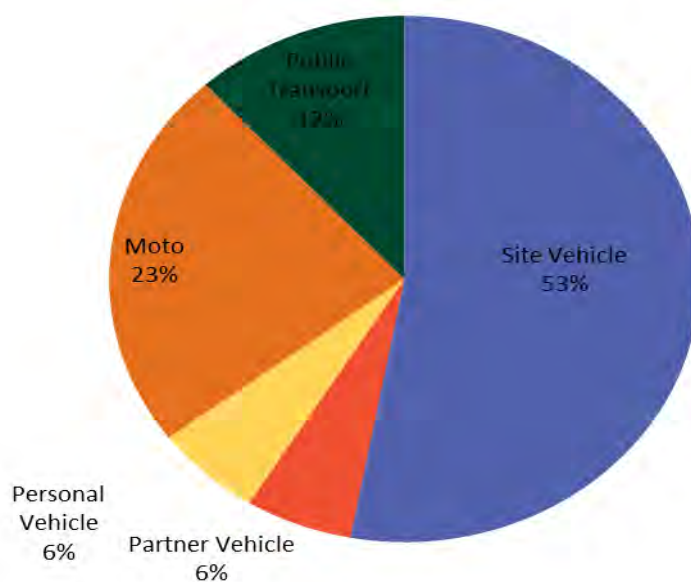
Figure 22: Means of transport used by DRZs to collect their supplies

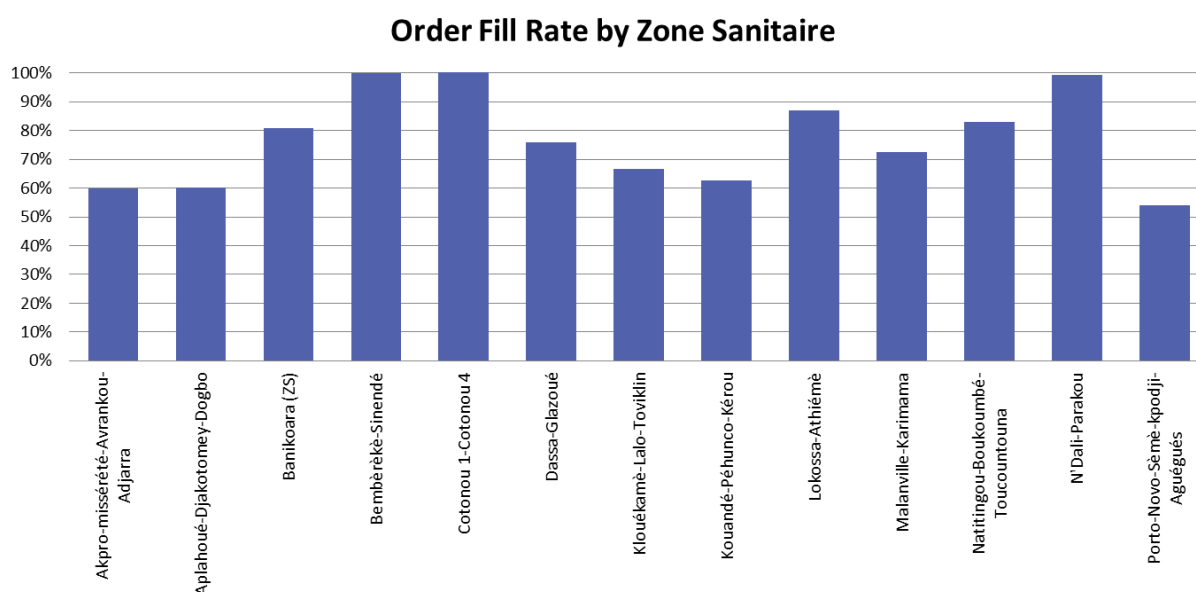**Order Fill Rate by Zone Sanitaire**

Figure 23: Order fill rate by health zones

Overall, order fill rate between CAME and the DRZs sampled was 73% but varies by district (figure 23).

CAME modified 58% of orders placed by the DRZs primarily because of stock-outs or insufficient stock (figure 24).
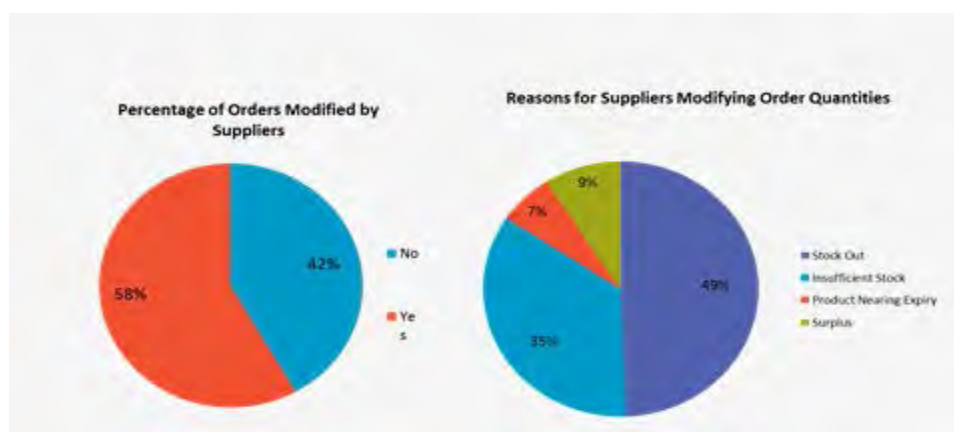

Figure 24: Supplier modification of orders and reasons for doing so

Zone Warehouses (DRZs)

DRZs serve as the intermediate storage point between CAME and health facilities for products in the public health supply chain and are the primary place most service delivery points acquire products. However, their legal status within the public health supply chain is ambiguous. Therefore, CAME does not have supervisory authority over the DRZs.

Data collection teams conducted site visits at 16 different DRZs, some in each health zone within the sample, and results show that DRZs are the primary CAME clients, accounting for 75% of sales.

DRZs met most of the storage criteria assessed, with the exception of availability of sufficient storage space (figure 25).
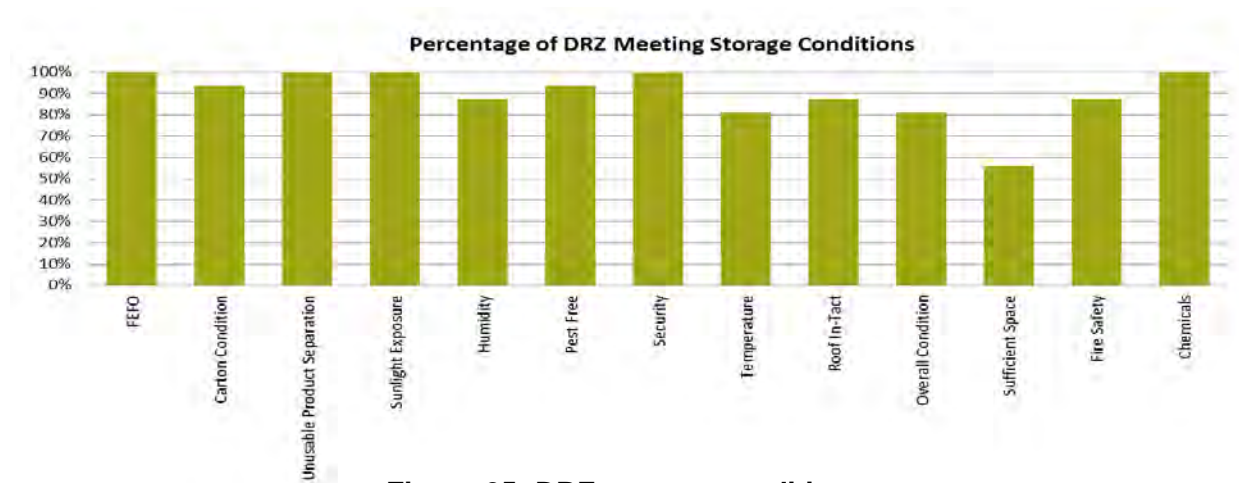

Figure 25: DRZ storage conditions

Overall capability is adequate at the DRZs with all but two capabilities above 60 percent (figure 26; see table 14).
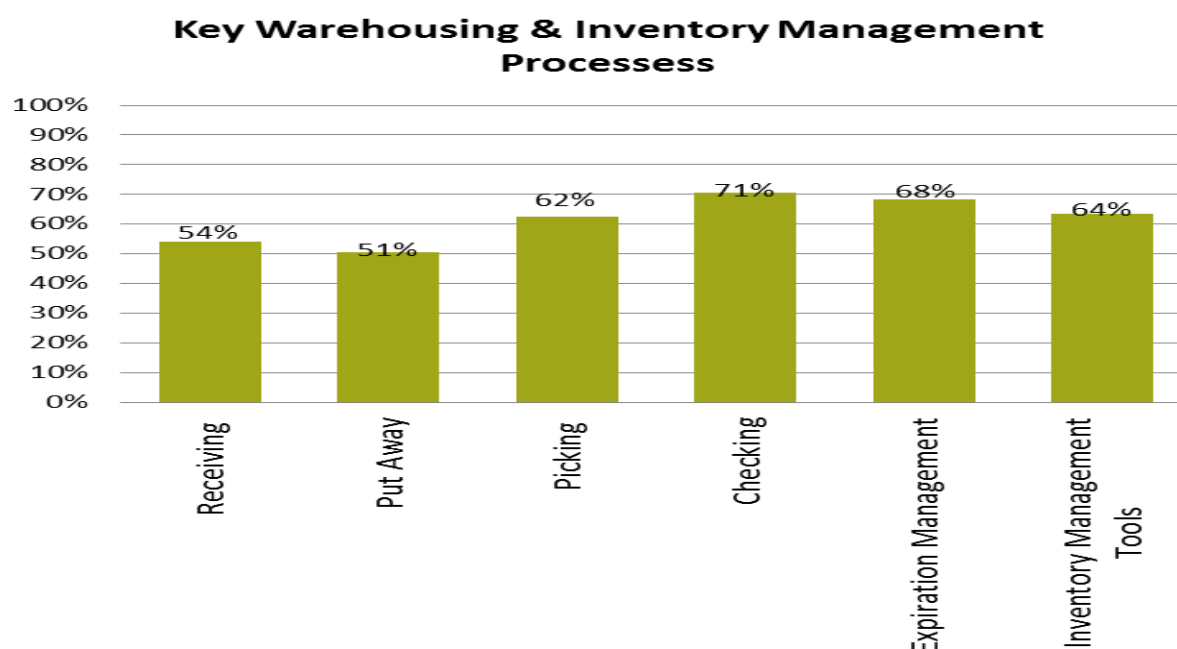

Figure 26: DRZ warehousing and inventory management capabilities

Table 14. DRZ Capabilities

Capability	Comments
Receiving	Of the DRZs, 54% had Excel- or Access-based software they used to monitor the receipt of products.
Put away	Nine of the DRZs did not practice ad hoc implementation of FEFO and use of nventory management tools.
Picking	Medistock prints off delivery notes that many DRZs use as picking lists.
Checking	All DRZs reported checking orders before they left the warehouse at least one time.
Expiration management	All DRZs record expiries in some form of inventory management tool, ranging from stock cards to an electronic tool (Medistock).
Inventory management tools	Only two DRZs were using stock cards as their primary inventory management tool. All others had access to more sophisticated software.

Despite strong capabilities for key processes, DRZs face some warehousing challenges (figure 27 and table 15).
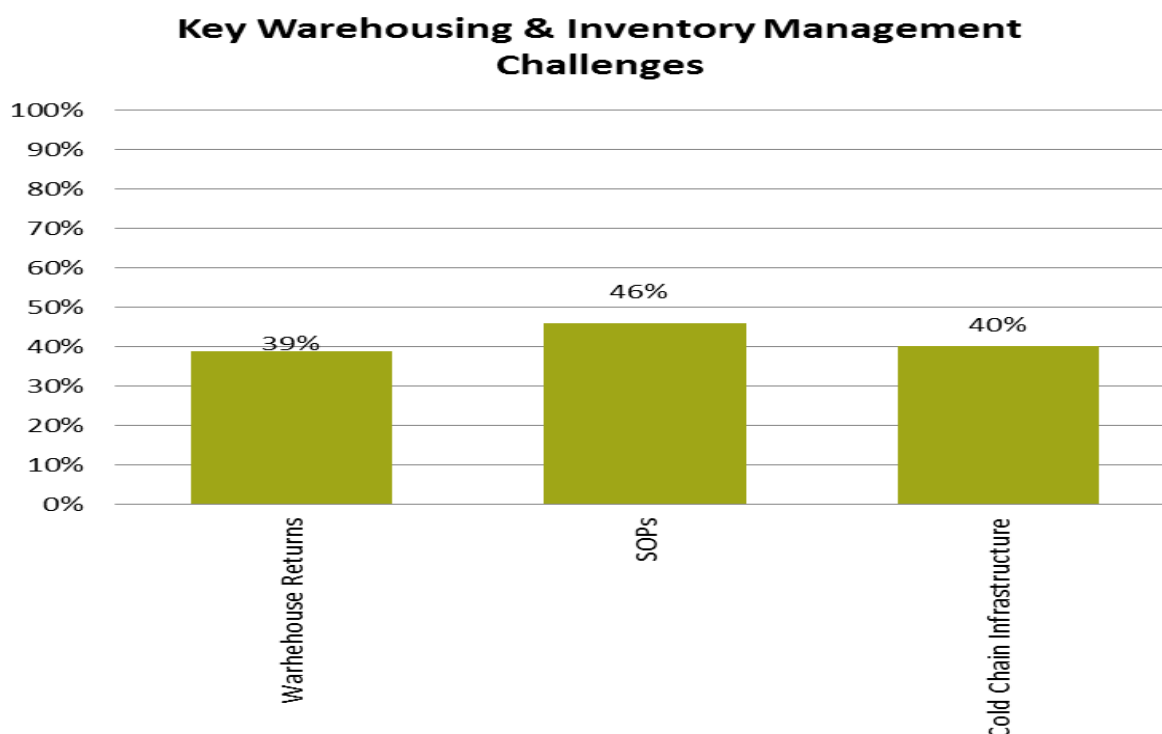
Figure 27: DRZ warehousing and inventory management challenges

Table 15. DRZ Warehousing and Inventory Management Challenges

Capability	Comments
Warehouse returns	Although returns are accepted by most DRZs, this process lacks formality and returned commodities are often returned to the same shelf as usable product.
SOPs	Although some DRZs had manuals on inventory management procedures, these are not standardized national documents.
Cold chain infrastructure	Cold chain infrastructure is limited to adequate refrigerators, but procedures are not always followed to monitor the cold chain.
Min/Max levels	DRZ facilities lack established minimum and maximum stock levels to guide the ordering process.

Stock Cards at the DRZ Level
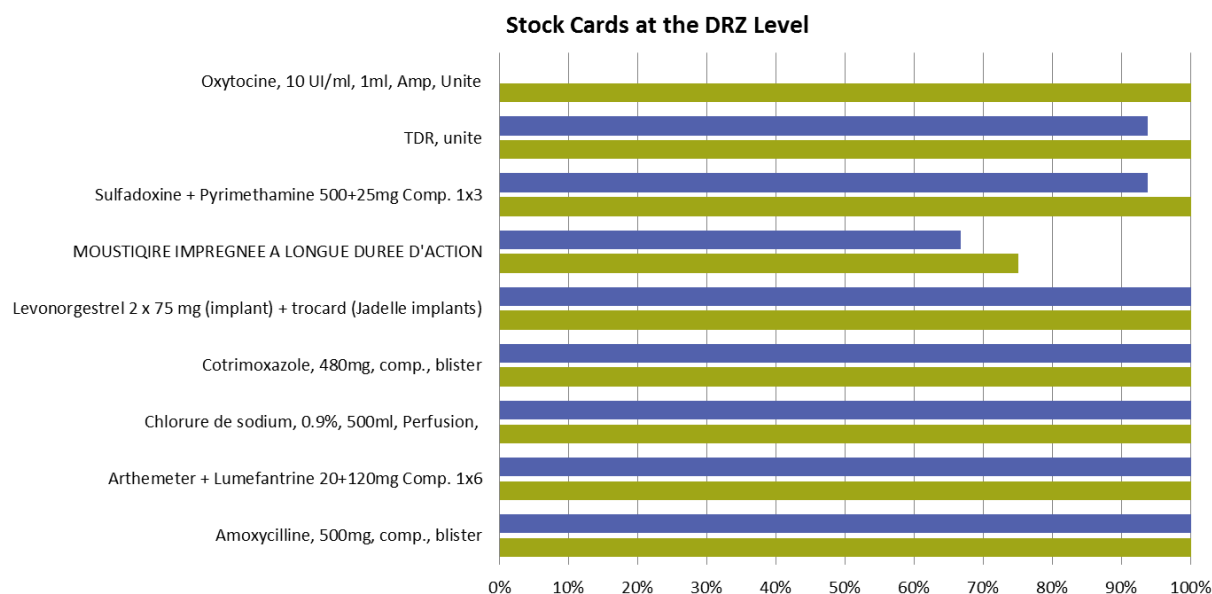
Figure 28: DRZ stock card availability and up-to-date status

Stock accuracy is also high at the DRZ level, with over 75% of facilities having matching stock card and physical inventory quantities (figure 29).

DRZ: Stock Accuracy by Tracer Product
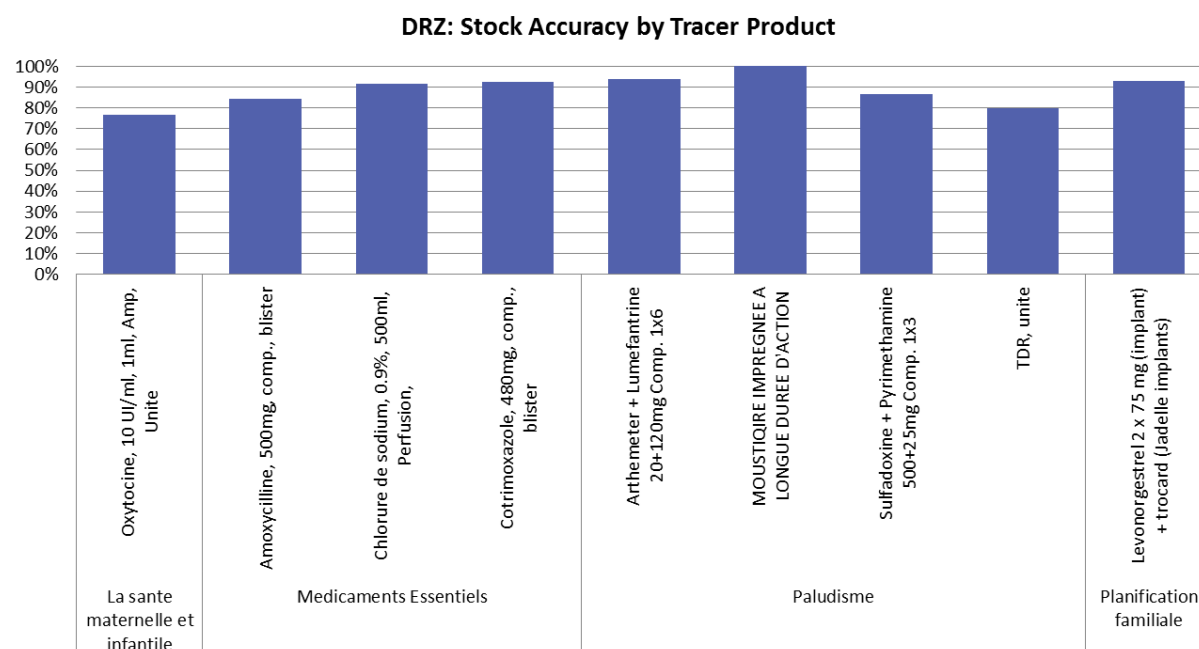
Figure 29: Zone warehouse stock accuracy by tracer product

On the day of visit, six of nine tracer commodities had a stock-out rate of 10% or higher (figure 30).
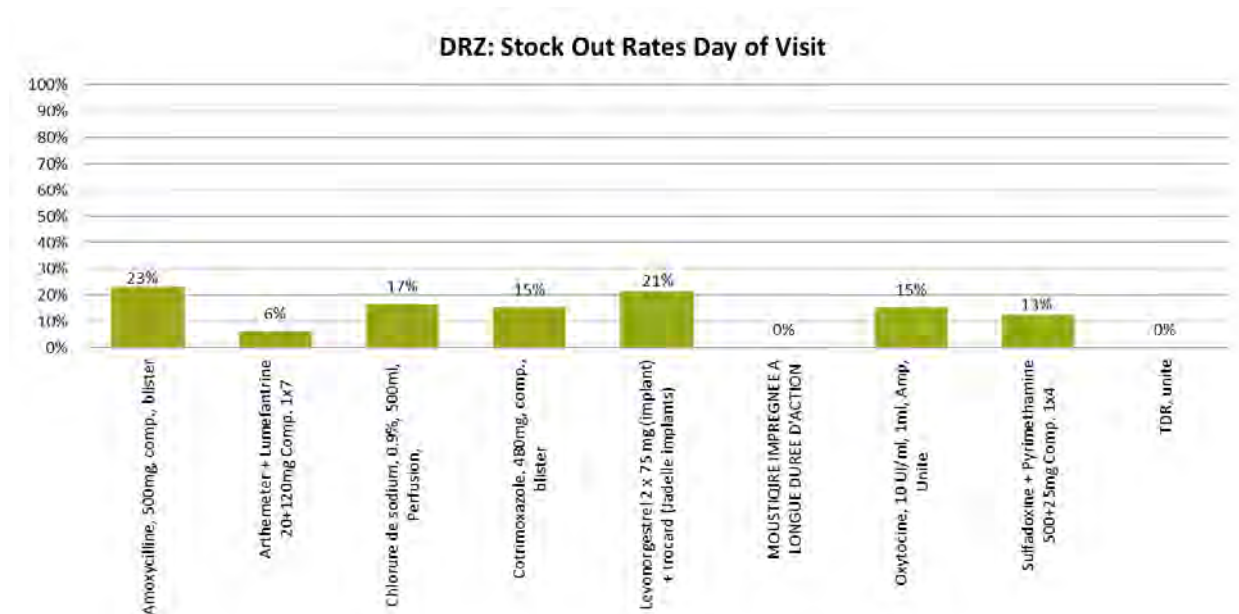
Figure 30: Zone warehouse stock-out rates on day of visit

Regarding DRZ fulfillment of orders to health facilities in the health zone from February to July 2015, only 65% of orders sampled were planned (figure 31).
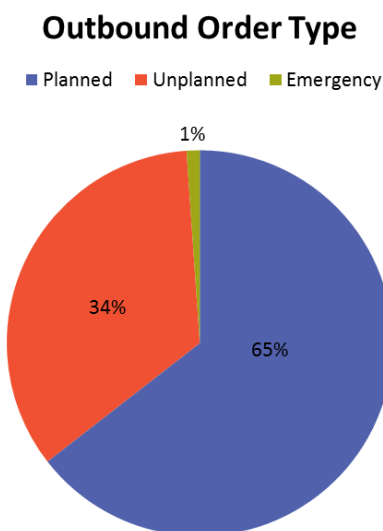
Figure 31: DRZ outbound order type

Forty percent of planned orders and 68% of unplanned orders placed by health facilities are collected on the same day (figure 32).

Order Lead Time DRZ to Health Facilities

Legend: ■ Same Day ■ 1-7 Days ■ 8-14 Days ■ 15-30 Days ■ Over 30 Days
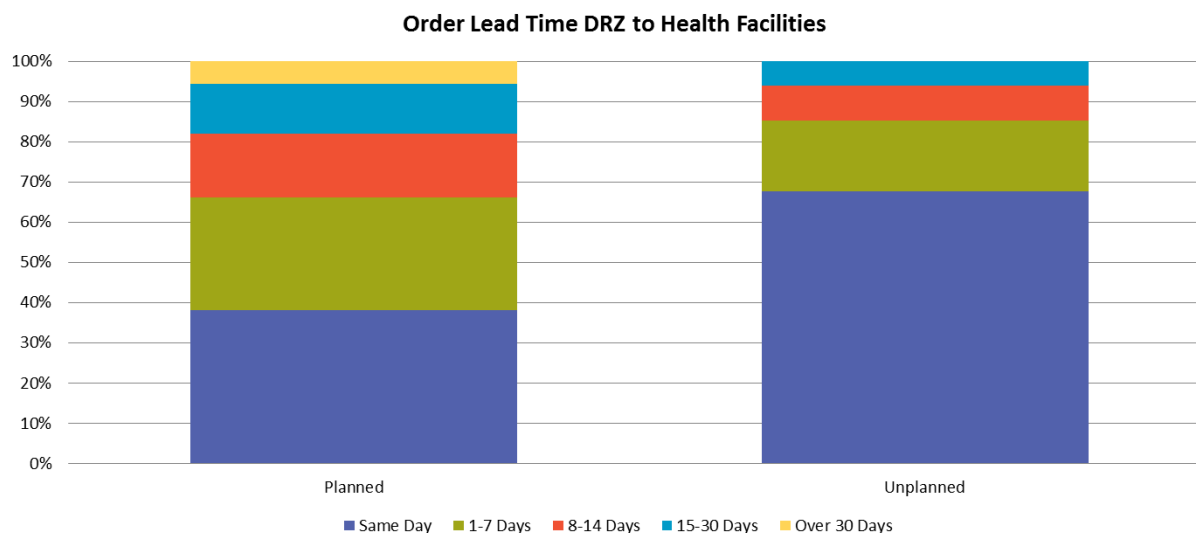
Figure 32: Order lead time between DRZ and health facilities

Order fill rate varied by health zone, ranging from 37% to 116% (figure 33).

Order Fill Rate Downstream Orders
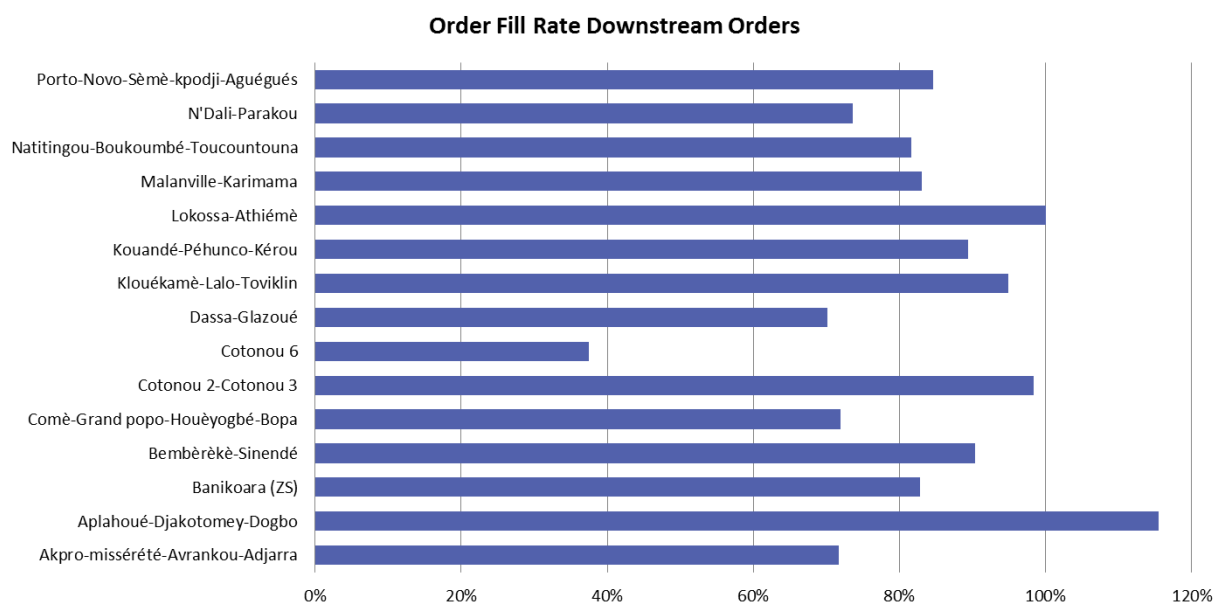
Figure 33: Health zone order fill rate

DRZ key transportation capabilities are shown in figure 34.

Key Transportation Capabilities
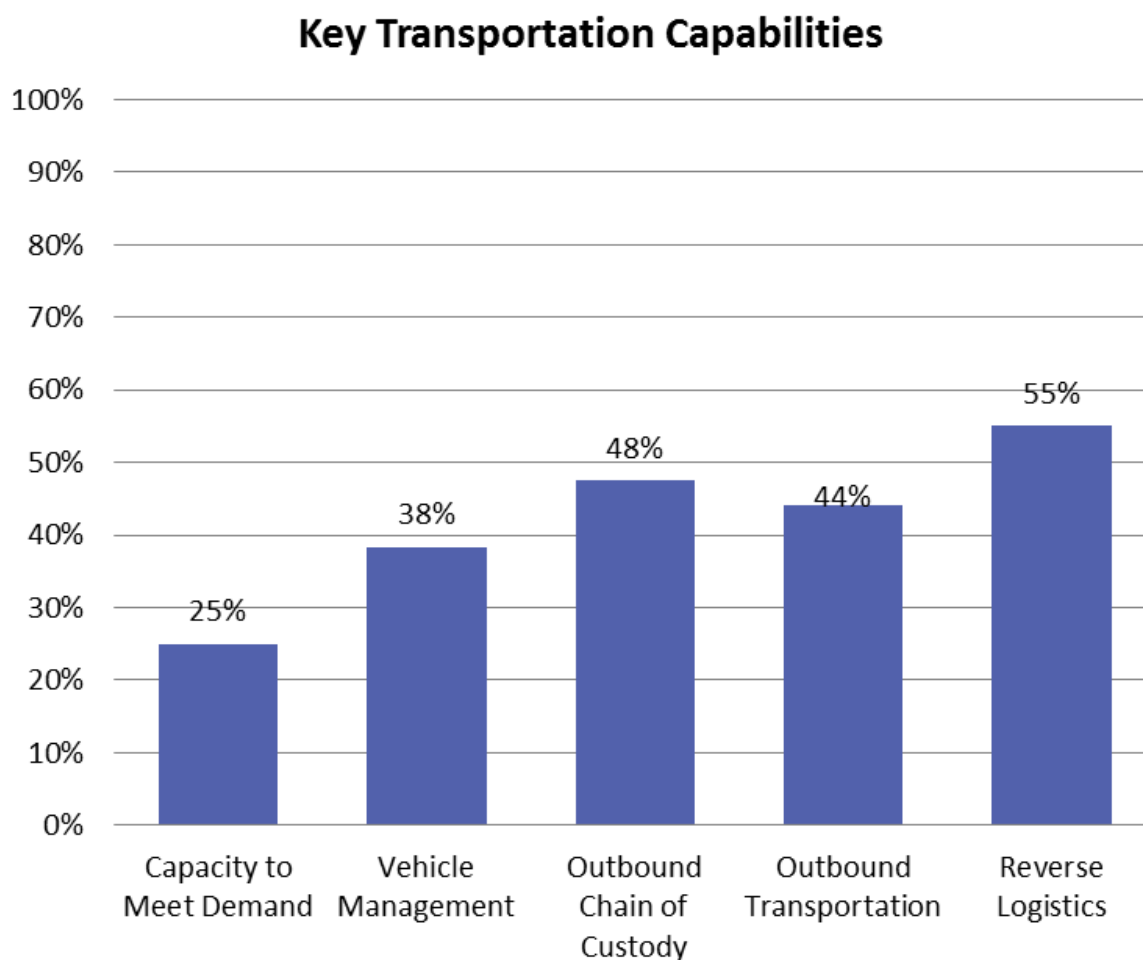
Figure 34: DRZ transportation capabilities

Transportation capability is limited at the DRZ level in Benin. Evidence of this is in the volume of orders being collected, rather than delivered. Almost all DRZs indicated their capacity to meet demand is highly constrained by budget and staff availability. Minimum vehicle management is in place, and little to no planning takes place for distribution of products.

If products are transported, delivery drivers accept return of products although documentation of this process is negligible.

Health facilities typically collect their products from the DRZs to serve patients' needs.

Health Facilities

Data collection teams visited 92 health centers and 19 hospitals (including reference hospitals).

Health facilities serve the primary and secondary levels of the health system. Most patients will use these facilities for primary and referral health care needs. Primary facilities consist of health centers and other types of clinics. Secondary facilities consist of the Zone Hospital.

Health facilities in Benin have access to a variety of inventory management tools, including stock cards, Excel, and other electronic software tools (figure 35).
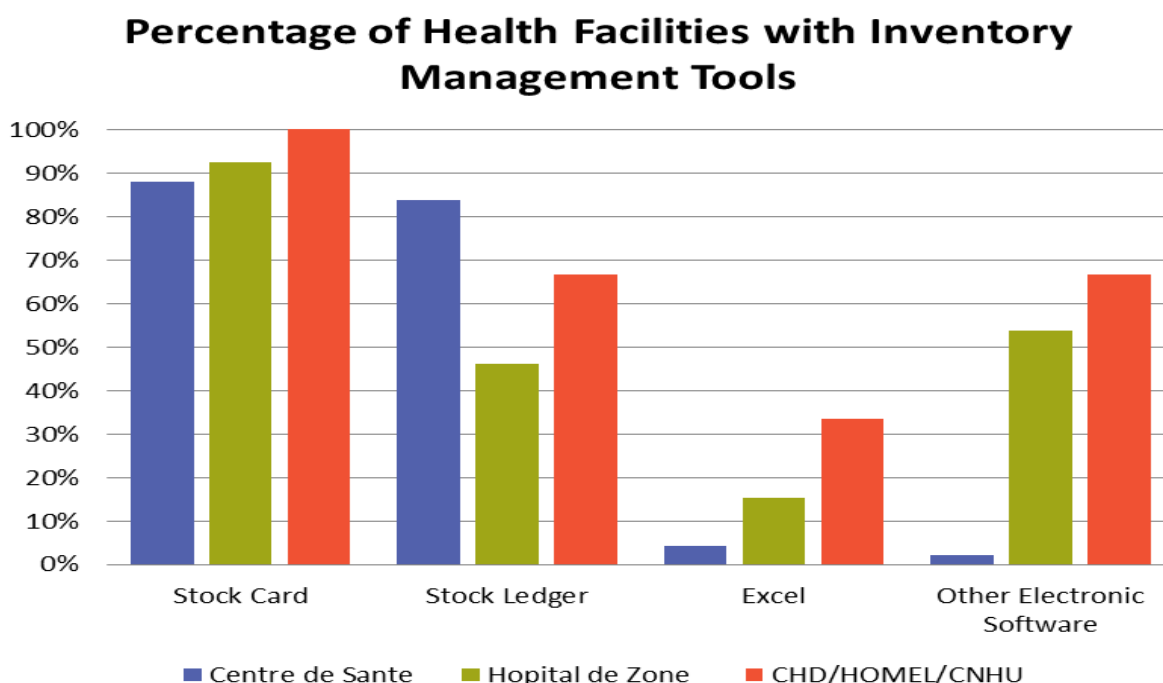
Figure 35: Inventory management tools in health facilities

The majority of health facility stores satisfactorily performed key inventory management processes. However, they face challenges with adequate infrastructure (figure 36).

Percentage of Health Facilities Meeting Key Storage Conditions
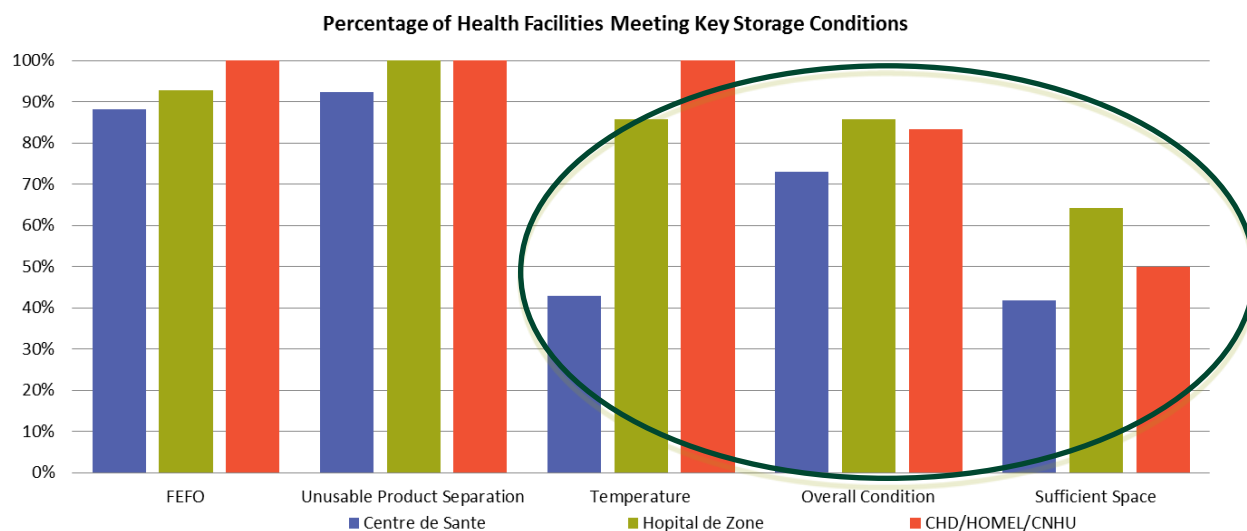
Figure 36: Health facility store performance on inventory management processes and infrastructure

Capability increases from the CS to referral hospital level although most capabilities fall below the 60% threshold (figure 37 and table 16).
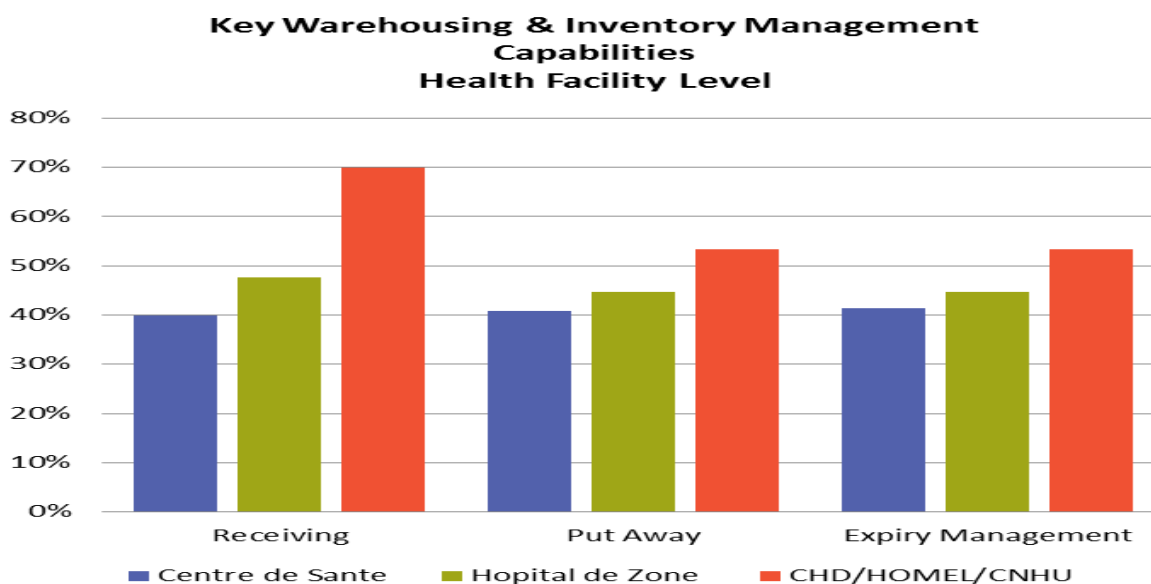
Figure 37: Health facility warehousing and inventory management capabilities

Table 16. Health Facility Capabilities

Capability	Comments
Receiving	Capability ranges from 40% to 70%, indicating that although received products are checked against the delivery note, information on receipts is typically entered into a paper-based inventory management tool.
Put away	Capability ranges from 41% to 53%. Products typically have assigned places on shelving, but FEFO and recording of inventory management information are typically implemented on an ad hoc basis.
Expiration management	Capability ranges from 41% to 53%. Expiry management is generally implemented on an ad hoc basis

Health facilities also face several infrastructure capability challenges at the CS level (figure 38).
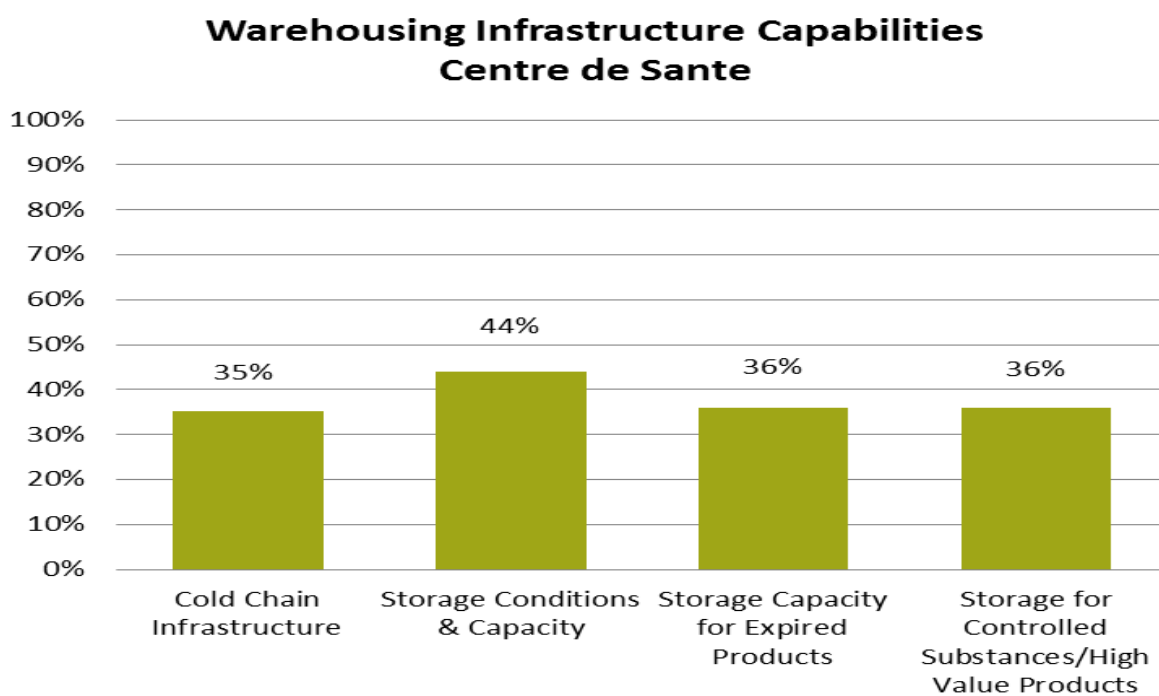
Figure 38: CS warehousing infrastructure capabilities

Table 17. CS Warehousing Infrastructure Capabilities

Capability	Comments
Cold chain infrastructure	Although facilities often have access to a refrigerator, limited access to power and equipment maintenance challenges reduce the functionality of the equipment.
Storage conditions and capacity	At theCS level, storage space is often inadequate and minimally organized.
Storage capacity for expired products	CS space constraints mean that often no dedicated space exists for storage of expired products.
Storage for controlled substances/high-value products	Facilities lack dedicated space for controlled substances or high-value products. Access to these products is controlled.

Stock card availability is high at the hospital levels, but limited for HIV products at the CS level (figure 39).
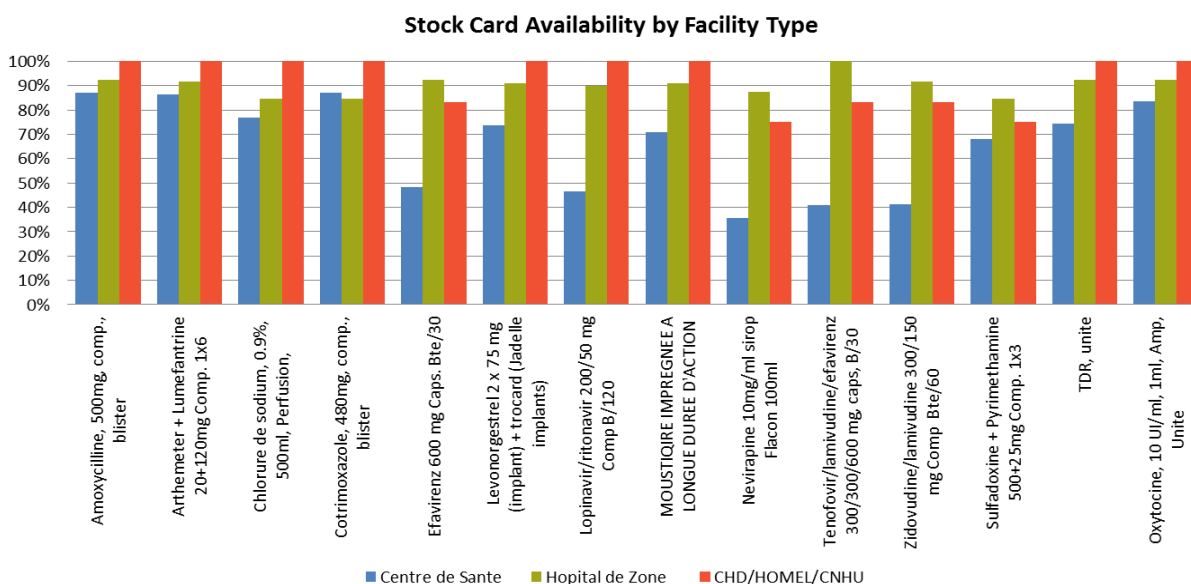
Figure 39: Stock card availability by health facility type

When stock cards are available, they are up to date at the hospital level (figure 40).
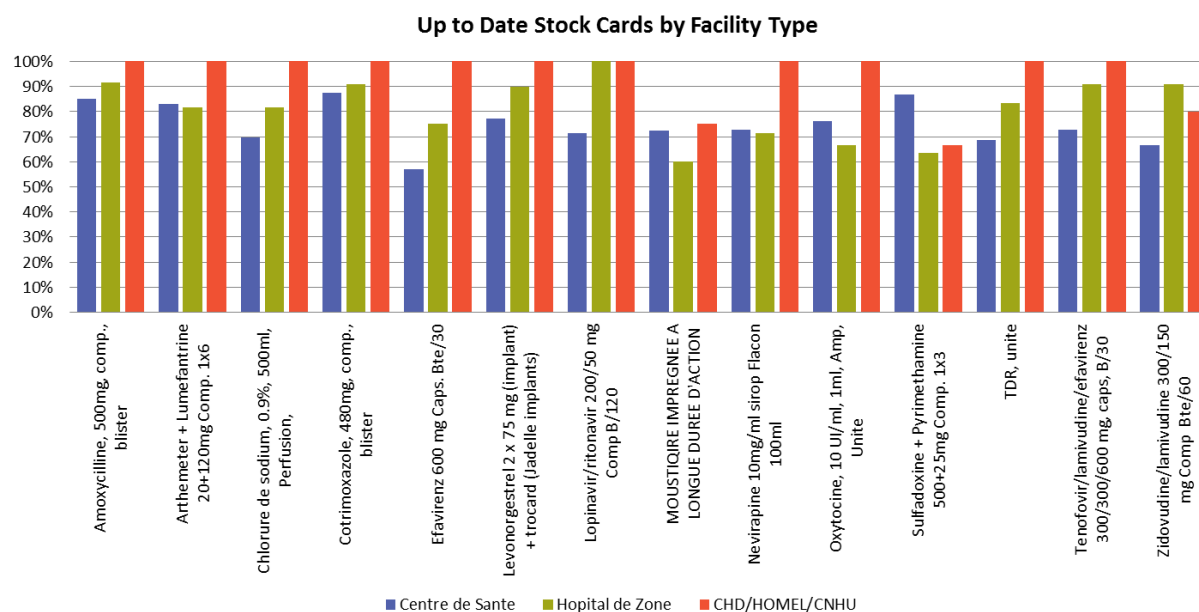
Figure 40: Up-to-date stock cards by health facility type

Challenges with inventory management tools are focused at the CS level, particularly with HIV/AIDS products (figure 41).
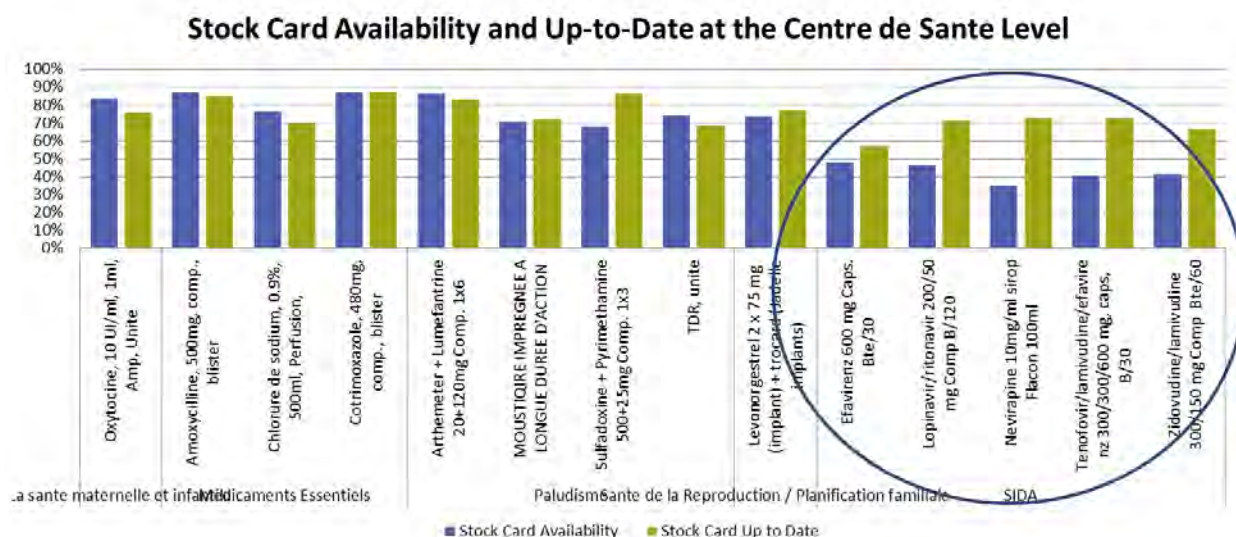
Figure 41: CS stock card availability and up-to-date status

Stock-out rates are high for both essential medicines and malaria products at the health facility level (figure 42).
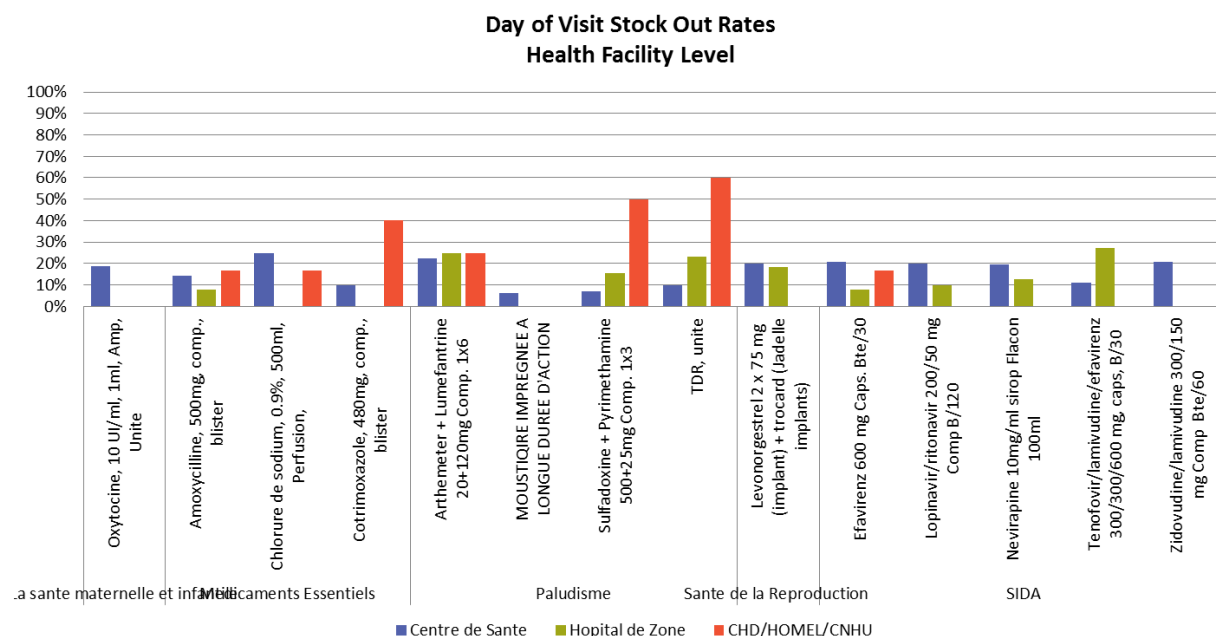
Figure 42: Stock-out rate at health facility level on day of visit

Both artemisinin-based combination therapy (ACT) tracer commodities and malaria rapid diagnostic tests experienced stock-out rates above 10% at most health facility types (figure 43).
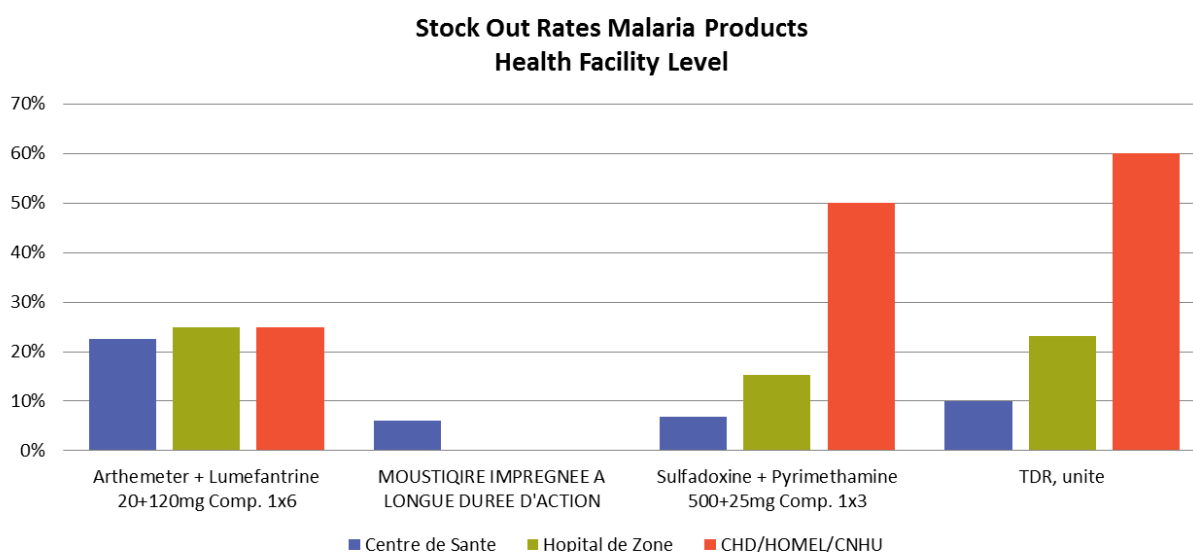
Figure 43: Stock-out rates of malaria products at health facility level

Community Health Workers

Data collectors interviewed 490 CHWs to better understand the supply chain at the community level. Three tracer commodities were assessed at the community level: amoxicilline 500 mg, ACT blisters of six tablets, and rapid diagnostic tests. Only 10% of CHWs manage amoxicilline.

Inventory management tools were widely available to CHWs for malaria products, and over 90% percent of CHWs had stock cards for both ACTs and rapid diagnostic tests (figures 44 and 45).

Percentage of Community Health Workers Who Manage Tracer Commodities
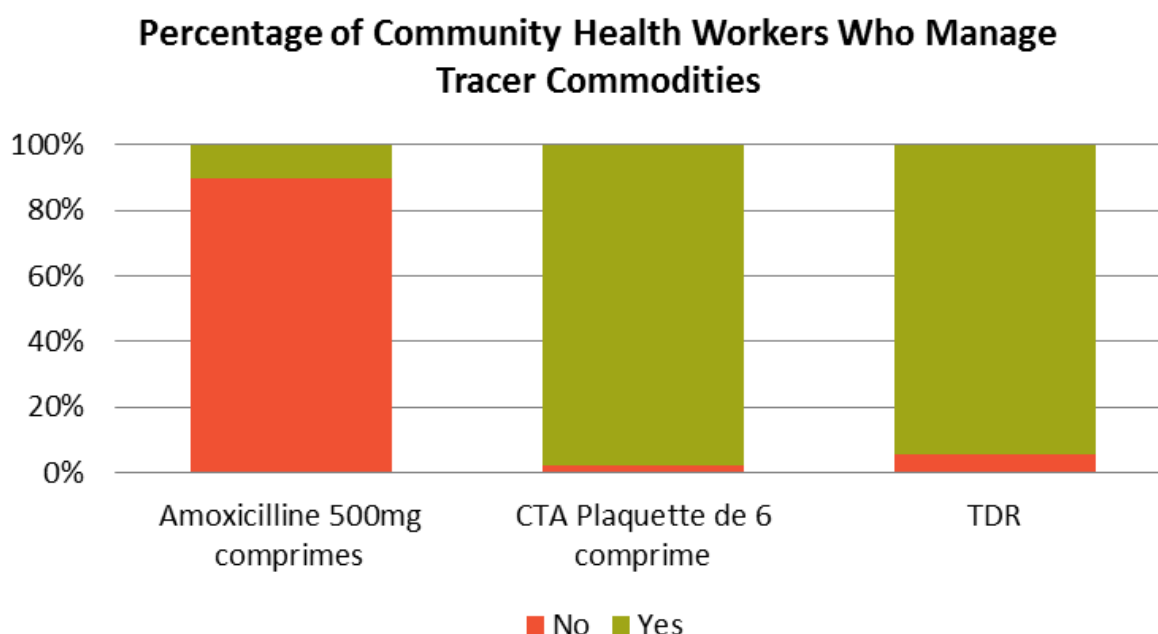
Figure 44: Percentage of CHWs who manage tracer products

Percentage of Community Health Workers with Stock Cards by Tracer Product
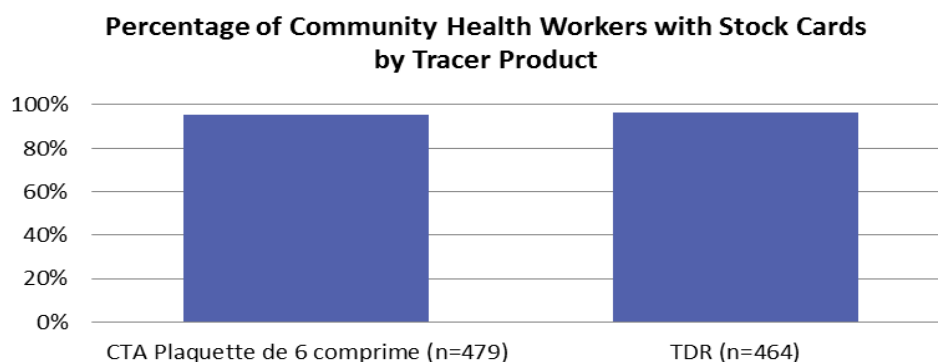
Figure 45: Percentage of CHWs having stock cards, by tracer products

Supervision of CHWs is taking place regularly in most DDSs (figure 46).

Percentage of Community Health Workers Receiving a Supervision Visit
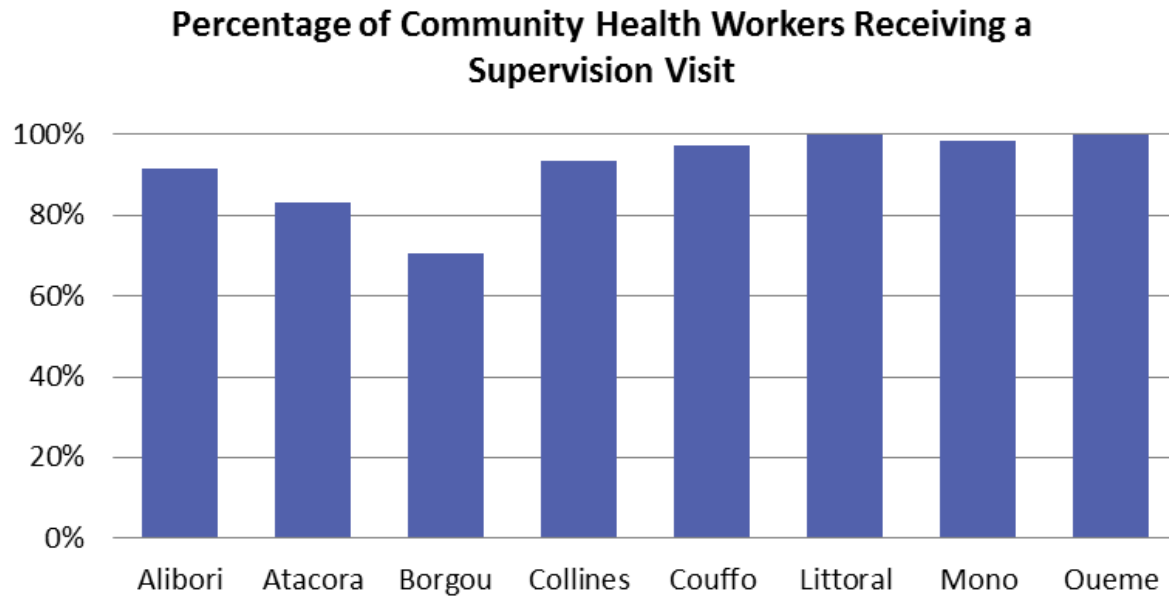
Figure 46: Supervision of CHWs

With the exception of those in Atacora and Borgou, more than 90% of CHWs interviewed received supervision in the last six months. Supervision is conducted frequently, with 89% of CHWs receiving supervision in the last two months (figure 47).

Last Superverision Date Month
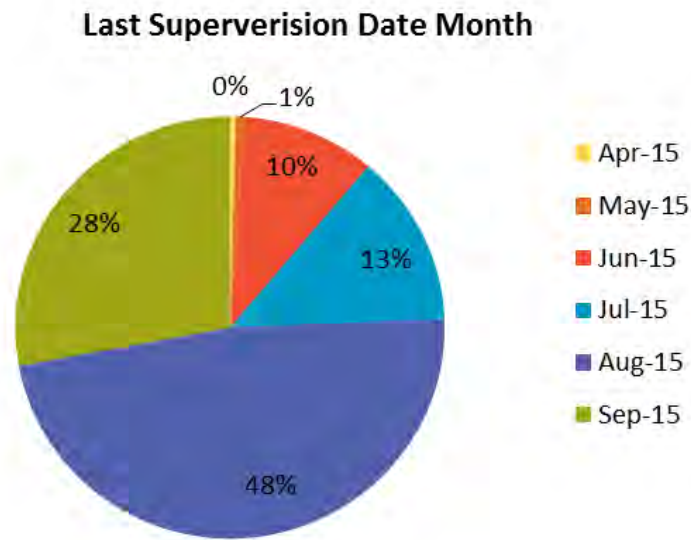
Figure 47: Last supervision date for CHWs

The primary method for determining order quantity is limited to estimation by the CHWs. In most DDSs, CHWs are responsible for determining the quantity of products ordered (figure 48). However, in Bourgou, Collines, and Couffo, over 40% of CHWs responded that they were not responsible for determining order quantity.

Methodologies used to determine order quantities depend heavily on estimation of need by the CHWs (figure 49). Twenty percent of CHWs responded they determine their order quantity based on availability of product at supply health centers.
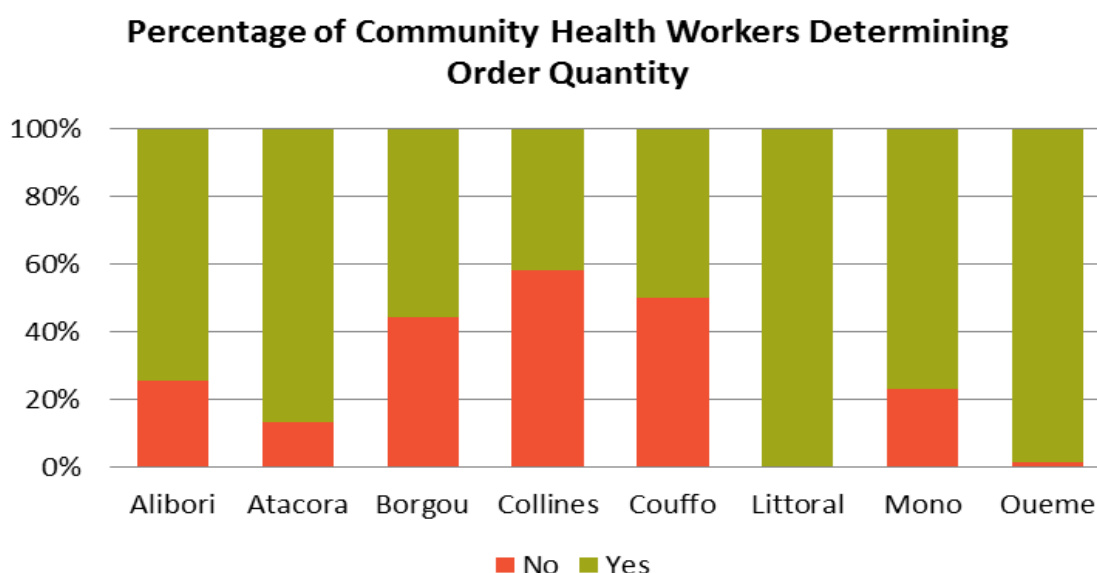
Figure 48: Determination of order quantities by CHWs
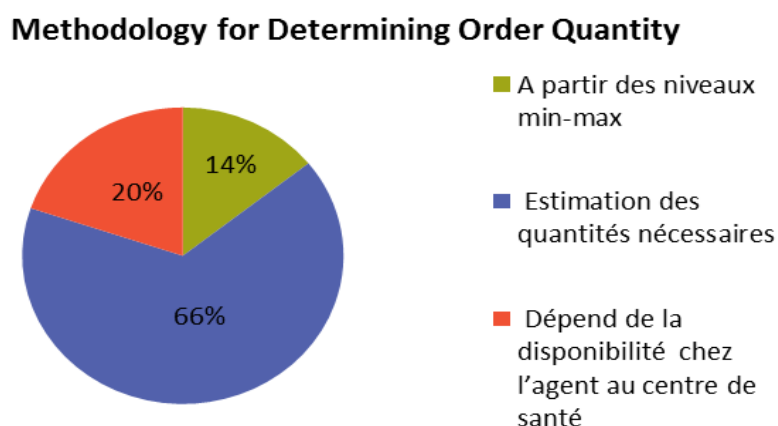
Figure 49: Methodology used by CHWs to determine order quantity

Supplier types varied by DDS although 79% of surveyed CHWs responded that their suppliers typically fill supply orders in full. Type of supplier varied significantly by DDS (figure 50). The CS is the most common supplier type, but donors and other sources also supply CHWs in some districts.

Suppliers for Community Health Workers by Region
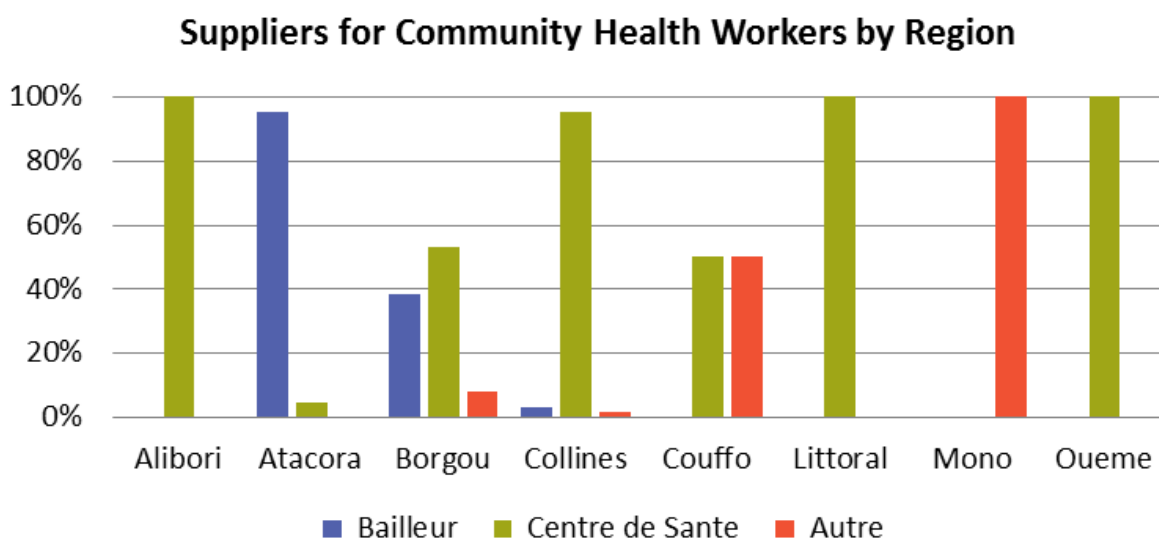
Figure 50: CHW suppliers, by region

Nevertheless, 21 percent of CHWs face challenges with order fulfillment (figure 51).
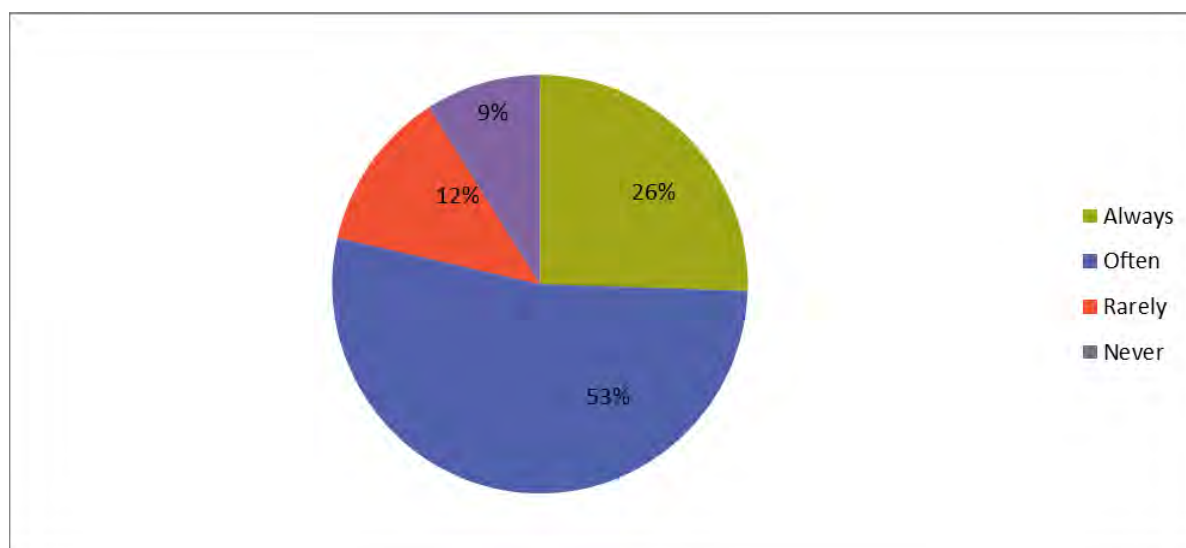
Figure 51: CHW orders fulfilled in full by suppliers

Stock-out rates at community level for malaria (PNLP) commodities ranged between 10% and 16% between May and July 2015 (figure 52).
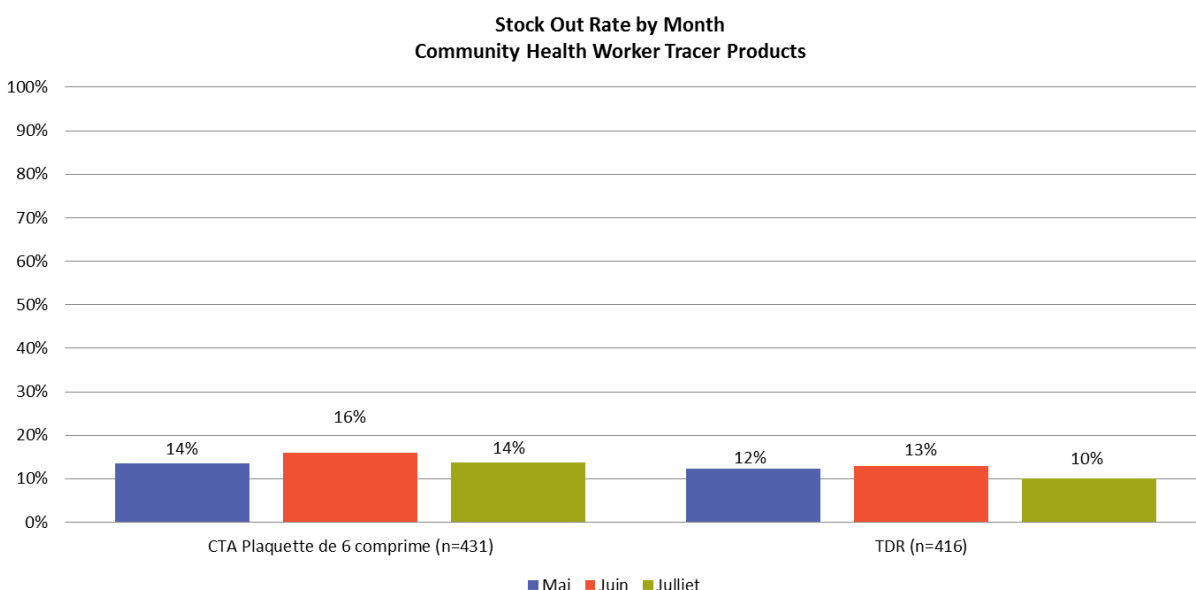
Figure 52: CHW tracer product stock-out rates

Eighty-one percent of CHWs are responsible for collection of their products from their suppliers, with 53 percent using bikes or motorcycles including a mechanism to protect products during transportation. Nineteen percent of CHWs travel by foot to collect to their products (figure 53).
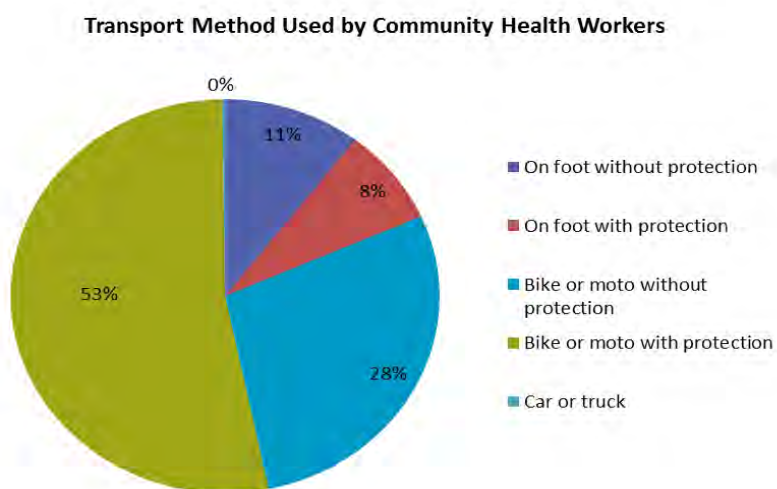
Figure 53: Means of transport used by CHWs

Malaria program (PNLP) LMIS reporting rates are high at 84% overall submission and high levels of timely and complete reporting (figure 54). Of the 412 reports submitted, only 47% had scheduled delivery dates, and of the reports with scheduled delivery dates, 90% were submitted on time.

On average, late reports were submitted four days after the deadline, and 78% of reports were complete. Complete reporting includes losses and adjustment, consumption, and stock on hand data. Consumption data had the lowest level of completeness at 78%, losses and adjustments 92%, and stock on hand 96% (figure 55).

PNLP LMIS On-Time Reporting

■ On-Time   ■ Late
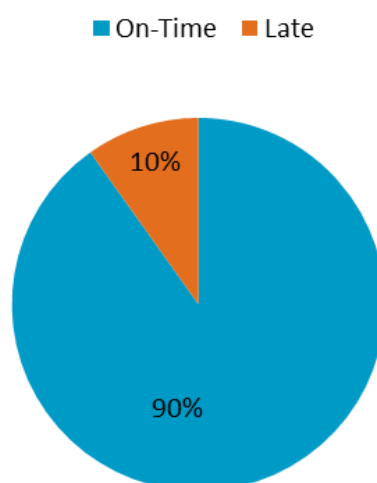
Figure 54: Malaria program on-time reporting by CHWs

PNLP LMIS Complete Reporting

■ Incomplete   ■ Complete
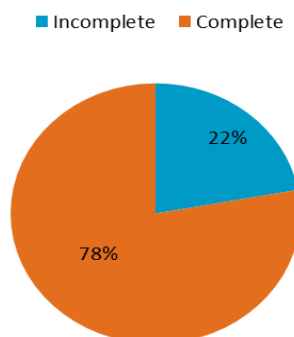
Figure 55: CHW complete reporting on malaria program commodities

Pharmaceutical Waste Management

DPMED is responsible for pharmaceutical waste management policies and central-level destruction. Capability to transport and incinerate pharmaceutical waste appears to be adequate; however, identification, segregation, and storage capabilities are inadequate (figure 56). Additional findings on pharmaceutical waste management processes are shown in tables 18 and 19.

DPMED Waste Management-Key Capabilities
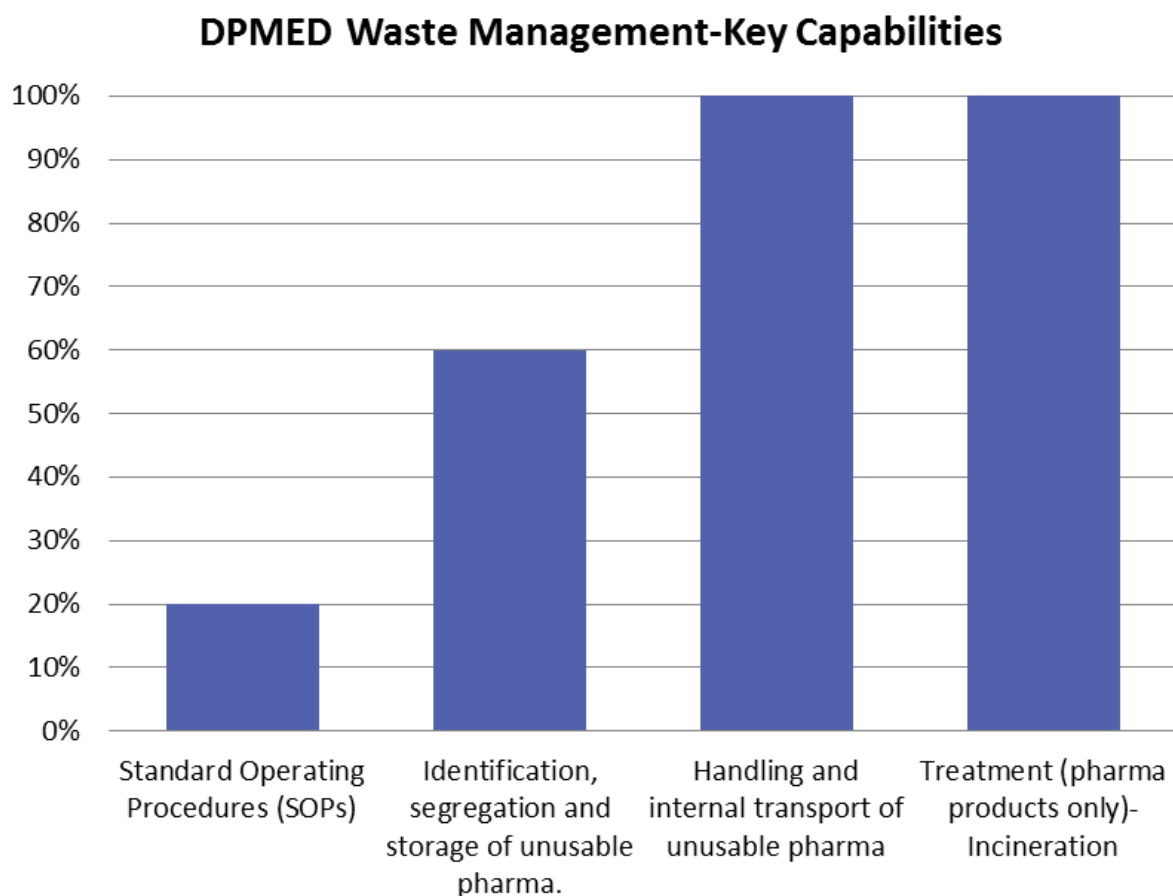
Figure 56: DPMED pharmaceutical waste management capabilities

Table 18. DPMED Pharmaceutical Waste Management Capabilities

Capability	Comments
SOPs	SOPs are not available. The process is in progress and financed by WHO through the MUSKOKA initiative. SOPs will be available December 31, 2015, at the latest.
Identification and segregation of unusable pharmaceuticals	Products are separated and secured, but no procedures are in place to inventory unusable products.
Handling and internal transport of unusable pharmaceuticals	Procedures are in place and are followed. Expired products at the peripheral and intermediate levels are stored at the DDS and separated during destruction.
Incineration	The company chosen for destruction of products does it in accordance with WHO standards.
Encapsulation	Destruction is done with the ministry of the environment in a secured landfill, but the report of the destruction process is not shared with DPMED.

Functional incinerators are available at most health facilities; however, they are typically used only for destruction of biomedical waste and empty malaria rapid diagnostic test kits (figure 57).
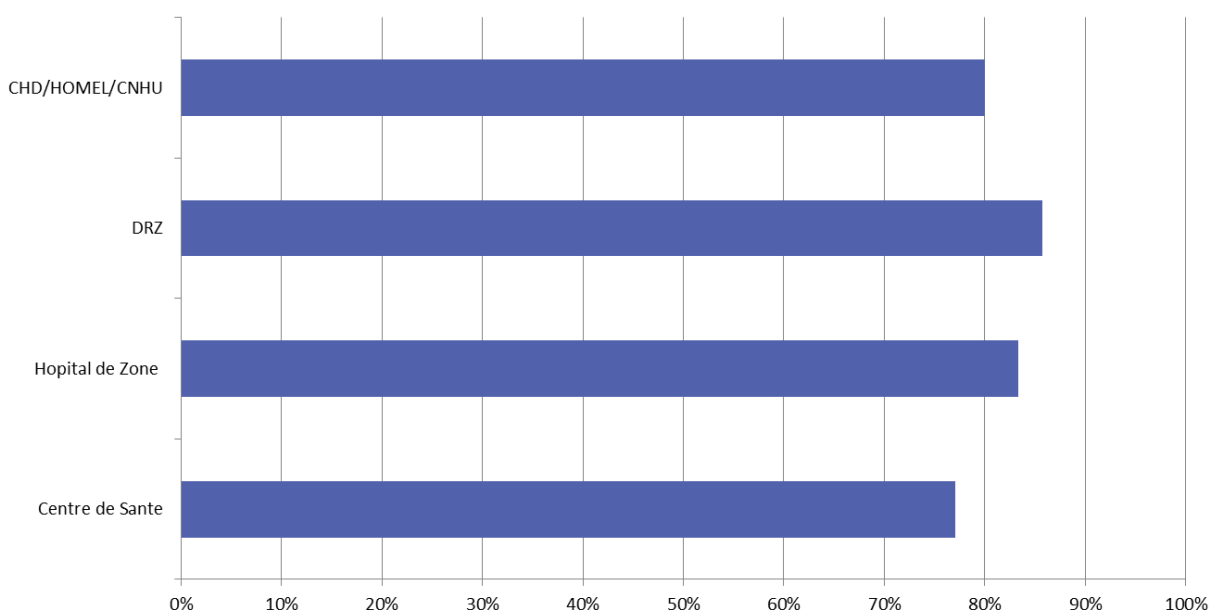
Figure 57: Availability of Incinerators in health facilities

Although infrastructure for waste management is in place, capability is low across the supply chain (figure 58).

Waste Management Capability
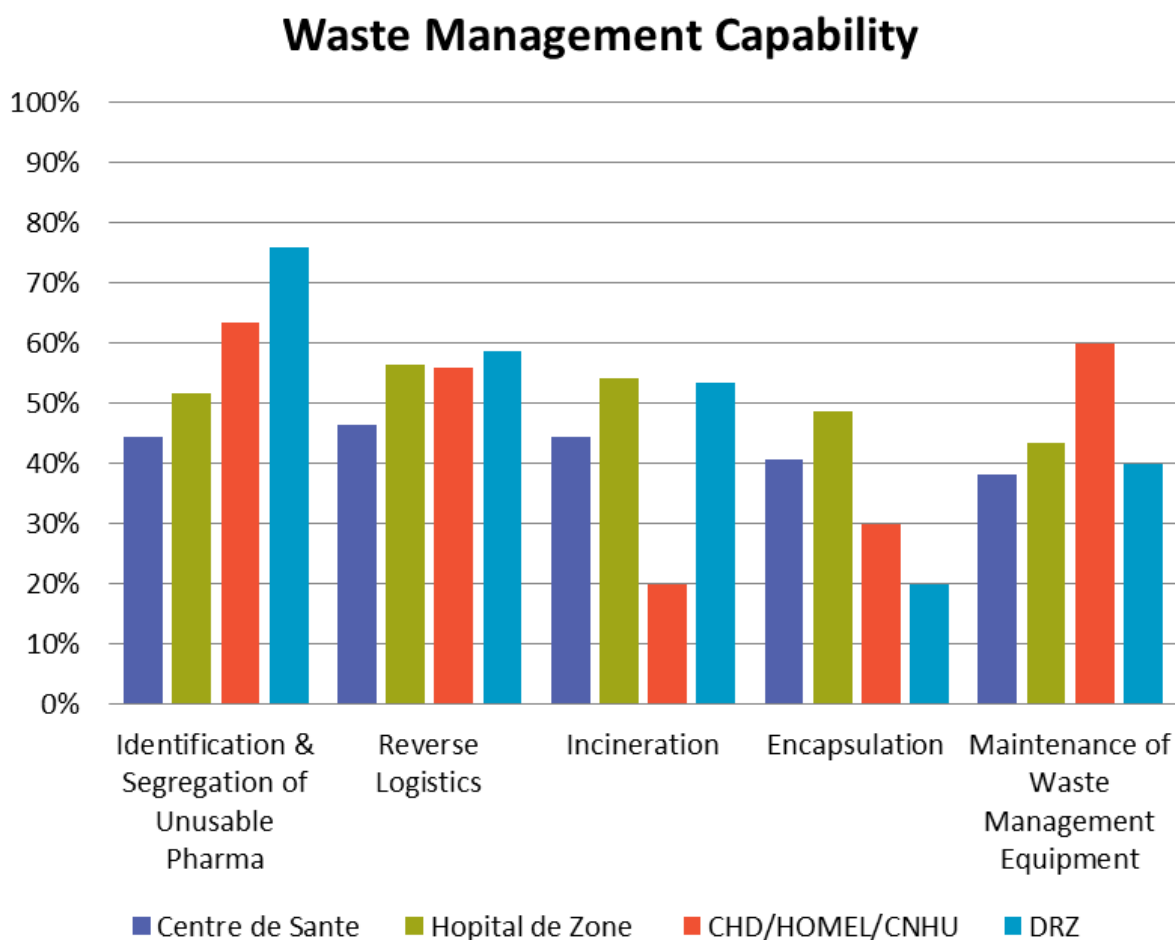
Figure 58: Waste management capability

Table 19. Waste Management Capability

Capability	Comments
Identification and segregation of unusable pharmaceuticals	Only the DRZ level has processes in place for the storage of unusable pharmaceuticals, with other levels either storing unusable pharmaceuticals among usable product or not organizing unusable pharmaceuticals when stored separately.
Reverse logistics	A system is in place to transport unsable products to higher levels of the supply chain, but they are often not segregated during transport.
Incineration	Although incinerators are largely available, products are often burned below recommended temperatures for pharmaceuticals.
Encapsulation	Waste is most often buried in an untreated landfill, posing risks to the environment.
Maintenance of waste management equipment	With the exception of reference hospitals, incinerators receive infrequent maintenance.

Logistics Management Information System

LMIS reports are submitted within the vertical program supply chains, with the majority of reports sent directly to the implementing partners (figure 59).

Overwhelmingly, facilities are submitting LMIS reports directly to the implementing partner. Bypassing the DRZs in the reporting structure limits the intermediate component of the supply chain's understanding of consumption.

While PNLP, DSME, and Essential Medicines had clear reporting frequencies, facilities reported several different timelines for submission of LMIS reports for the PNLS (figure 60).

LMIS Report Recipients by Program
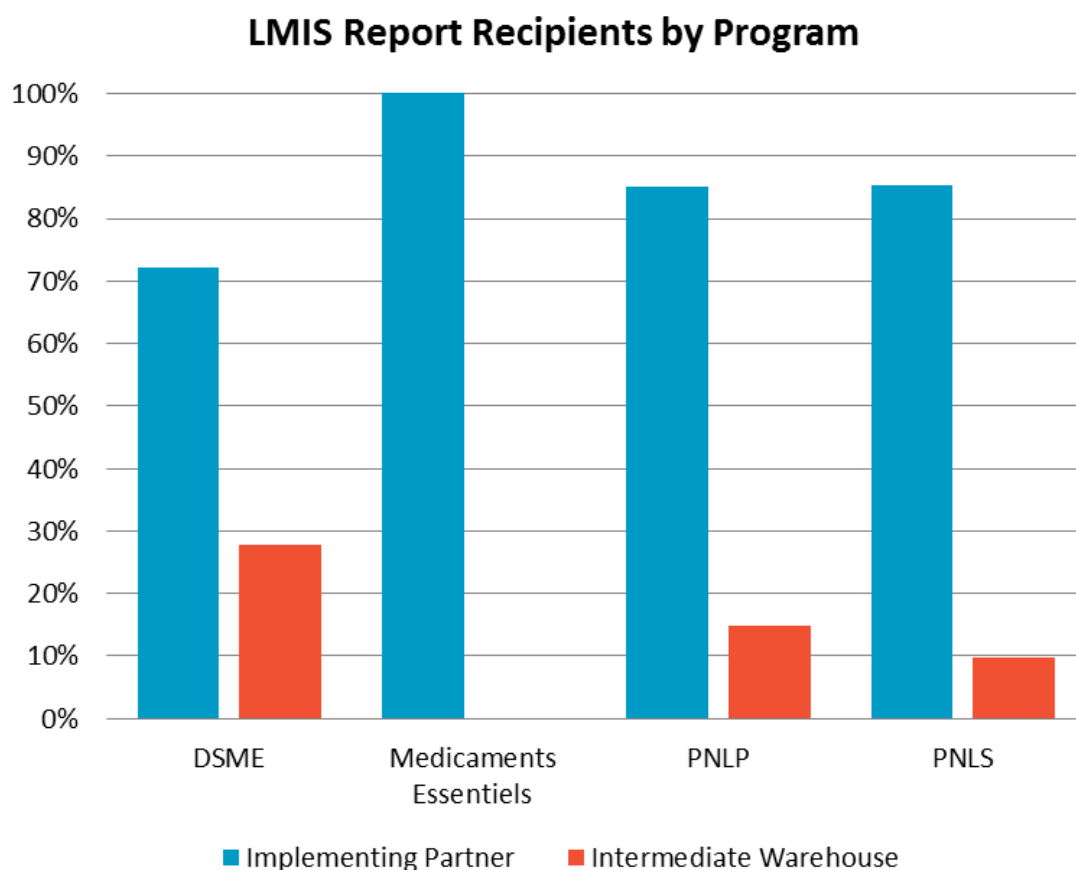
Figure 59: LMIS report recipients

PNLS LMIS Reporting Frequency
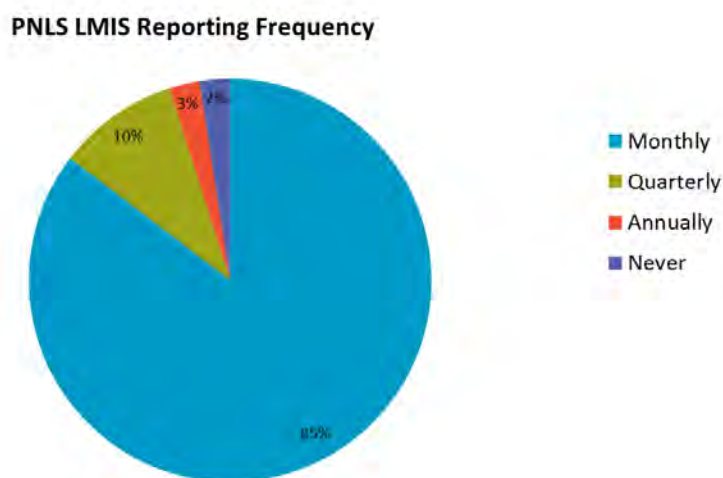
Figure 60: HIV program LMIS reporting frequency

Copies of LMIS reports were available 86% of the time for PNLP, with lower availability rates for DSME and PNLS (figure 61).
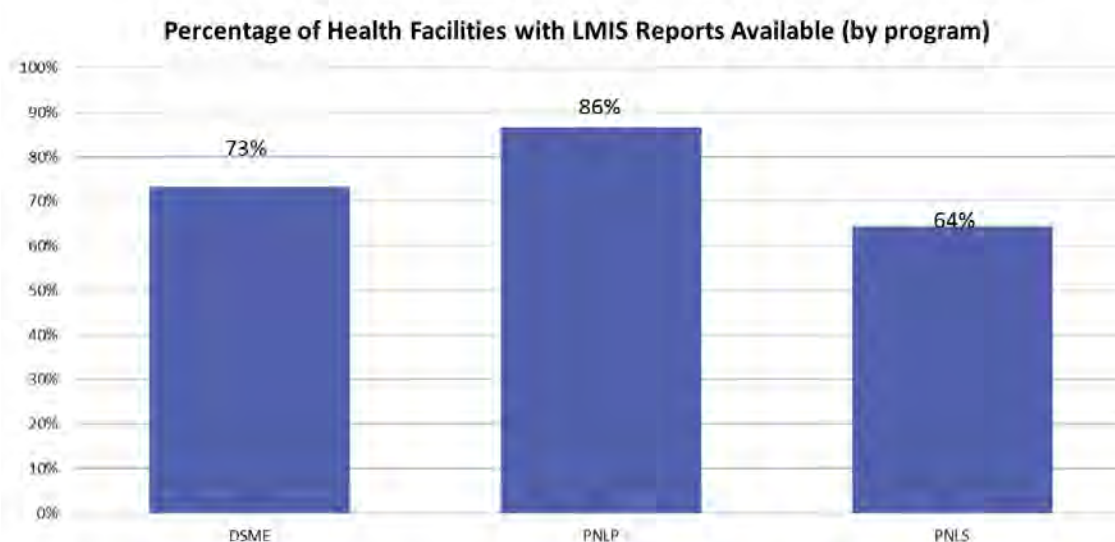
Figure 61: Availability of LIMS reports at health facilities, by health program

Referral hospitals and DRZs have lower reporting rates, below 70%, relative to higher rates for CSs and Zone Hospitals (figure 62).
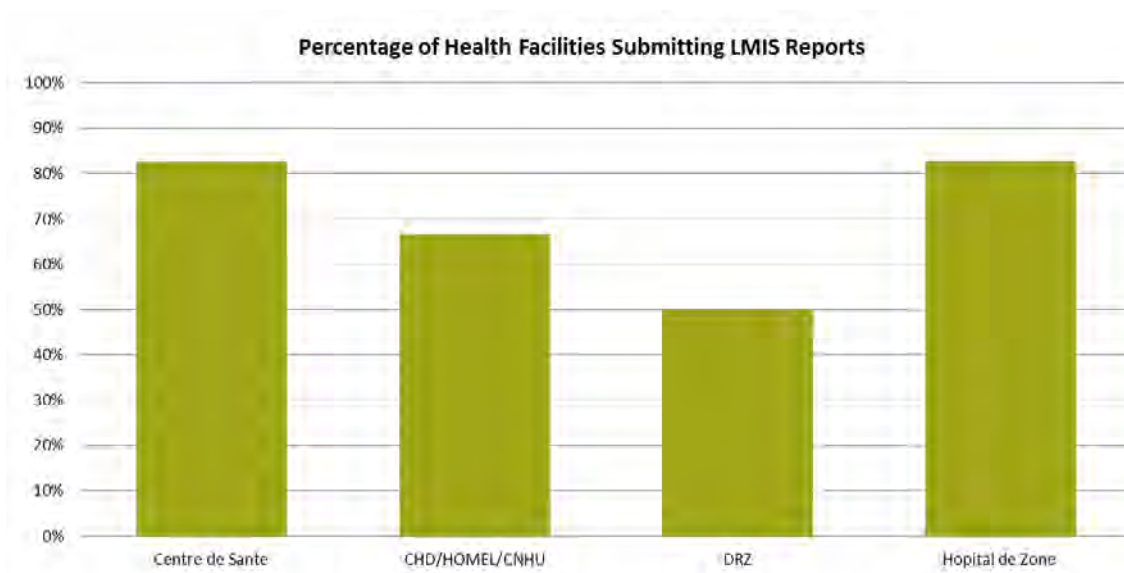
Figure 62: Health facility submission of LMIS reports

The PNLP had higher reporting rates than both the DSME and PNLS at or above 80% for a consecutive three months (figure 63).
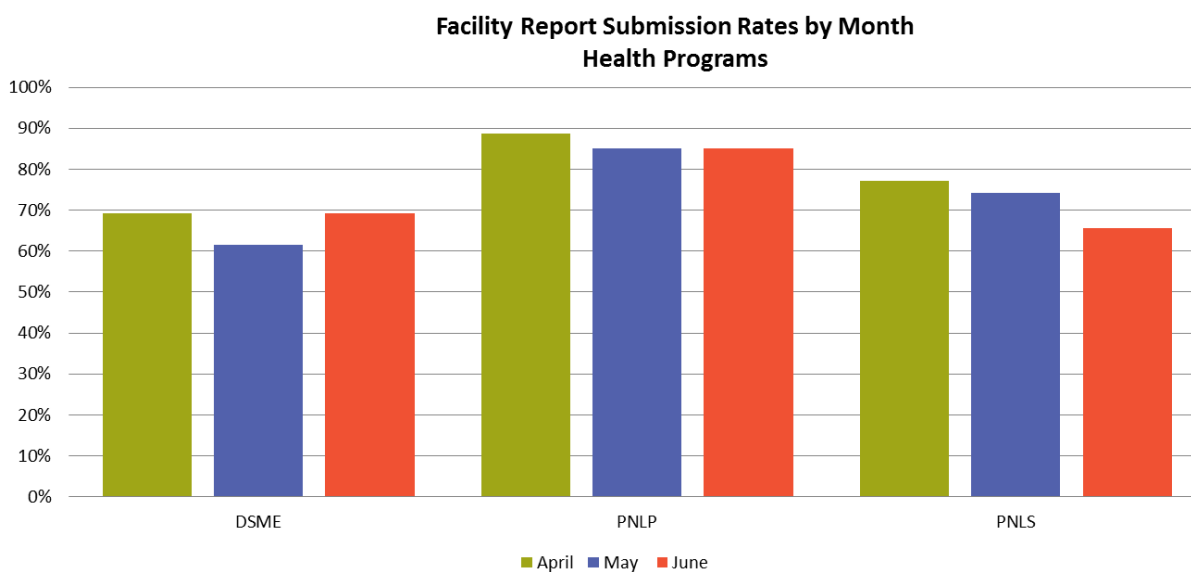
Figure 63: Health facility report submission rates by month, by health program

On-time reporting rates were low for all three programs, with less than 50% of facilities submitting reports on or before the scheduled date (figure 64).

Facilities Reporting On-Time
Health Programs
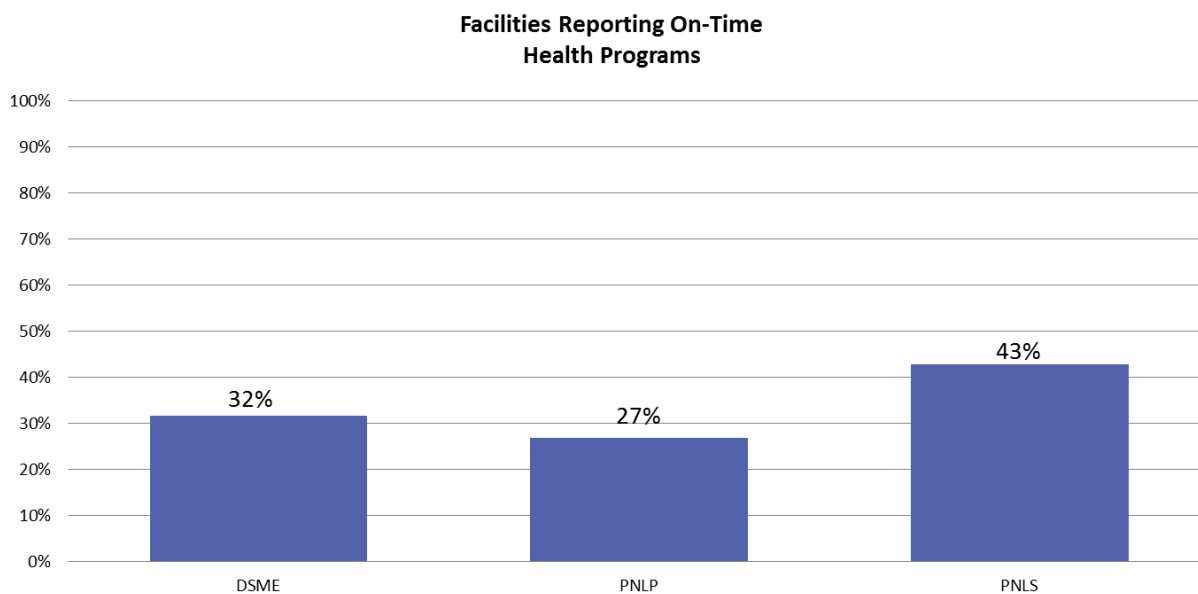
Figure 64: Health facility on-time reporting, by health program

Although not timely, the PNLP LMIS reports were complete 92% of the time. Both the DSME and PNLS have challenges with completeness of reports (figure 65).
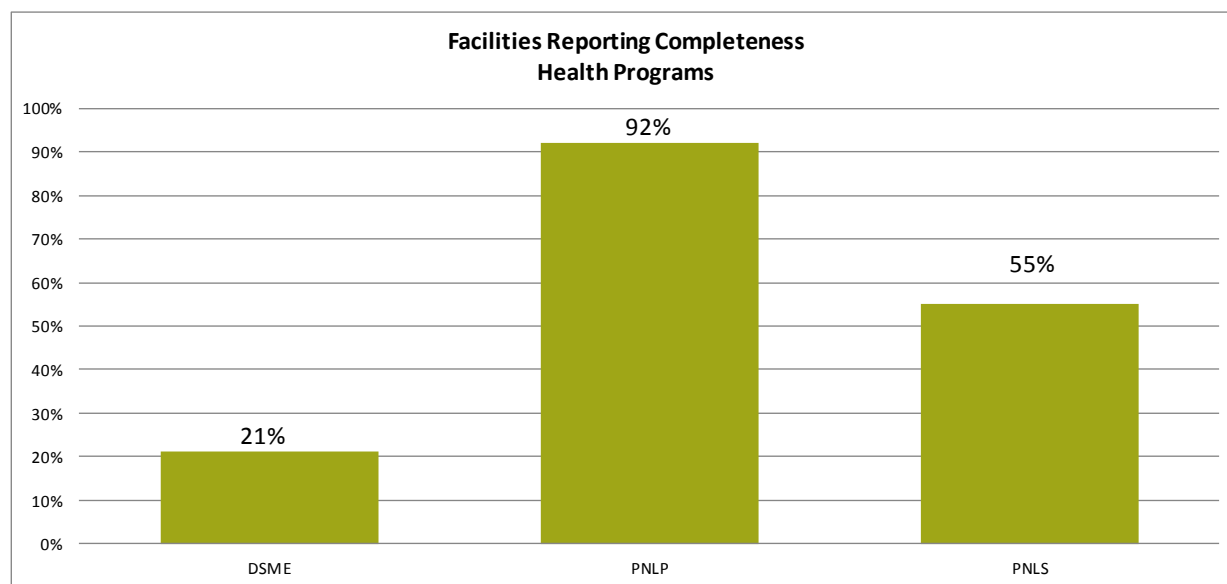
Figure 65: Health facility LMIS report completeness

ANALYSIS

Public Sector Health Supply System Structure and Functioning

The structure of Benin's public health supply system is complex. Several actors implement diverse procurement, warehousing, inventory management, and distribution processes, depending on categories of product and funding sources. Pharmacovigilance processes are partially developed, and National Procurement and Supply Management Guidelines developed by the responsible governance entity (DPMED) in 2014 are not systematically implemented by all actors.

The distribution network consists of the Central Medical Store (CAME) along with its regional warehouses, which supply zone warehouses that serve as intermediate storage facilities for supplies for health service delivery institutions. However, the flow of medicines and other health commodities within this simple network is complex, depending on whether the products are issued to consumers free of charge or with a charge. Priority public health disease programs, HIV, malaria, and maternal, newborn, and reproductive health commodities are mostly issued free of charge, and although these products are warehoused at CAME, their mode of distribution is determined by each of the individual disease programs. For example, HIV products flow from CAME directly to antiretroviral treatment institutions in quantities determined by the HIV program. Therefore, ultimate responsibility for program inventory management resides with the applicable program and *not* with CAME. CAME plays a passive role in program inventory management, involving warehousing and transportation of these inventories only. This situation weakens the supply system's responsiveness, mainly because the LMIS is weak and information sharing between CAME, programs, and health service delivery institutions is exclusively paper based. Weakened responsiveness of the supply system contributes to product stock-outs.

Another weak link in the structure of Benin's public sector supply chain is at the interface between CAME and zone warehouses (DRZs). DRZs are MOH warehouses without independent management authority as is obtainable with CAME, and they are not supervised by CAME. DRZs are managed by Zonal Health teams and do not share supply chain data with CAME. CAME's lack of visibility into zonal demand is illustrated by the very high rate (58%) of modifications of DRZ purchase orders placed with CAME, resulting from stock-outs or insufficient stocks at CAME. Considering that 75% of CAME sales went to DRZs, and that 58% of these orders had to be modified, evidently this is a significant weak link in the supply system that negatively affects the population's access to medicines and other health commodities.

## Governance, Regulation, and Pharmacovigilance

A clear governance structure exists in Benin's health supply chain though governance capacity is very limited. DPMED, the regulatory authority, works in close collaboration with the national procurement and supply management committee (CNAPS) and with ad hoc committees that are set up when needed to ensure governance of pharmaceutical management in the country. However, governance procedures, including those for regulation and pharmacovigilance, are still

at a very basic stage of development, and an acute shortage of human resources exists at all levels, which significantly contributes to poor performance of key functions, such as medicine registration and marketing authorization, quality control testing, inspection of pharmaceutical establishments, quantification and management of needs, management of adverse medicine use reactions and risks, and related communications.

Procurement, Warehousing, Inventory, Transportation and Pharmaceutical Waste Management

Findings from this assessment show that capability maturity and operational performance in Benin's public health supply system vary significantly across supply chain management functional areas and among the different echelons of the supply network. Overall, health product selection and procurement reach satisfactory level of capability and performance. However, warehousing, inventory, transportation, and pharmaceutical waste management capabilities are extremely limited, negatively affecting operations. For example, 35% of all orders are unplanned or urgent, only 66% of total annual DRZ and CS orders are satisfied, and only 5% of all delivered orders are transported by proper means (table 3). Evidently, these limited capabilities significantly contributed to the 21% six-month average stock-out rate found. Details of the results on capability and performance in each of these supply management functional areas are found in respective subsections of this report.

Human Resources

Three categories of staff—pharmacists, store managers, nurse and midwives—were identified as being involved in health product supply management. However, pharmacists, nurses, and midwives are not involved in supply management in DRZs, and no pharmacist manages medicine supply in CSs and zonal hospitals. All institutions at all levels of the supply system have a designated store manager, but some of them perform this role on part-time basis only. Therefore, store managers play a dominant role relative to the other identified staff categories in supply management. Poor performance observed in this assessment characterizes the performance of store managers, indicating limited capability. For example, 35% of all resupply orders placed by DRZs and CSs are unplanned or urgent, and overall only 32% of LMIS reports sent to all three programs are prompt.

Overall, the supply system has a 13% to 27% staff transfer-in rate, with highest rate of transfer (26–50%) occurring among midwives who manage supply of health products in CSs and zonal hospitals.

BIBLIOGRAPHY

Djidjoho G., Degla D., Gningtoungbe, M., Onyango C. 2011. *Establishing a Logistics Management Information System for Malaria Commodities: The Experience of Benin.* Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.

DPMED. 2014. Directives nationales de gestion des approvisionnements en produits de santé dans le secteur public et privé à but non lucratif.

Gouvernement du Benin. *Évaluation du système national d'information et de gestion sanitaires (SNIGS) du Benin*. Mai 2007.

Islam M, ed. 2006. *Health Systems Assessment Approach: A How-To Manual*. Submitted to the US Agency for International Development in collaboration with Health Systems 20/20 Project, Partners for Health Reform*plus,* Quality Assurance Project, and Rational Pharmaceutical Management Plus Program. Arlington, vA: Management Sciences for Health.

Ndoye T, Chenin B, Djidjoho G, Degla D, Onyango C, Takoubo S, Davoh M, Akondé R. 2009. *Évaluation de la gouvernance, de la transparence et des opérations de la Centrale d'Achats des Médicaments Essentiels du Bénin, décembre 2008*. Présenté à l'Agence des Etats-Unis pour le Développement International par le Programme Strengthening Pharmaceutical Systems (SPS). Arlington, VA : Management Sciences for Health.

Palafox B, Tougher S, Patouillard E, Goodman C, Hanson K, Tassiba ME, O'Connell K and the ACTwatch Group. 2012. *ACTwatch 2009 Supply Chain Survey Results, Benin.* Nairobi: ACTwatch project, Population Services International.

President's Malaria Initiative. *Benin Malaria Operational Plan FY 2015*.

SHOPS Project, 2013. *Benin Private Health Sector Assessment*, Bethesda, MD: Strengthening Health Outcomes through the Private Sector Project, Abt Associates Inc.

SIAPS. 2014. *Estimating the In-Country Distribution Costs of Malaria Commodities in Benin and Kenya*. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.

Supply & Logistics Internal Control Evaluation (SLICE). 2011. *Benin Country Assessment Report*.

Torres Rueda S, Tougher S, Palafox B, Patouillard E, Goodman C, Hanson K, Tassiba ME, O'Connell K, and the ACTwatch Group. 2012. *A Qualitative Assessment of the Private Sector Antimalarial Distribution Chain in Benin, 2009*. Nairobi: Actwatch project, Population Services International.

ANNEX A. DRAFT SUPPLY CHAIN STRATEGIC PLAN

NARRATIVE

The goal of the national strategic plan is to ensure regular and continuous availability of quality health commodities at all levels of the health pyramid.

1. Governance and organizational support

Main challenges:

Some supplies for programs, the Directorate and CAME purchased by Technical and Financial Partners (TFPs) are not reported.

Opportunities:
The existence of a legal and institutional framework and strong political will in the National Health Program

1. Strategic objective: Strengthen governance in the pharmaceutical sector with the goal of making 95% of essential medicines and other quality health commodities available at all levels of the health pyramid

Selection

1.1. Specific objective 1: Improve the level of transparency to 95% in the management of essential medicines and other health commodities by 2020

    1.1.1. Strategy 1: Strengthen the application of laws and regulations

  1.1.1.1. Activity:

- Update existing laws
- Disseminate the laws in force through media (Official journal, television, and radio)
- Punish malicious acts

1.2. Specific objective 2: Register 95% of essential medicines and other health commodities on the NEML by 2020

    1.2.1. Strategy 2: Update the National Essential Medicines List (NEML) by 2016
    1.2.2. Activities:

- Set up an ad hoc committee of 10 people to revise the list

- Organize three consecutive three-day workshops of 35 people to revise the list
- Organize a five-day meeting of the ad hoc committee to finalize the document
- Organize a two-day national validation workshop

1.2.3. Strategy 3: Strengthen the use of the National List of Essential Medicines (NEML)

Activities:

- Print 3,000 copies of the NEML document
- Organize an official ceremony to launch the NEML
- Distribute the NEML and decree to all levels
- Organize awareness-raising sessions on the NEML and decree
- Monitor the use of the list at all levels
- Issue a decree to require the establishment of a therapeutics committee in the University Health Centers (CHUs)
- Train XXXX members of the therapeutics committee on their duties

1.2.4. **Strategy 4:** Strengthen the review process for the NEML and strategic supplies

Activity:

- Develop a guide for revision of the NEML
- Revise the current guide within 15 business days
- Organize a workshop to review the guide on use of essential medicines

Registration

Specific objective 3: Ensure registration of 95% of medicines and other health commodities by 2020 by strengthening the DPMED's legal and institutional framework

Strategy 5: Strengthen the medicine registration system

Activities:

- Set up an ad hoc committee at the DPMED to develop a procedures manual for medicine registration through a memo
- Develop the procedures manual
- Issue a decree to define the conditions for issuing certification of good manufacturing practices (GMP) to local manufacturers
- Issue an order to require inspection of manufacturing sites requesting marketing authorization (MA)

- Create by decree a DPMED/National Quality Control Laboratory (LNCQ) collaborative framework for market surveillance
- Publish regulatory texts on medicine registration in the Official Journal of the Republic of Benin
- Organize training for XXXX DPMED staff on detecting documentary fraud
- Provide the DPMED with the technical means to detect documentary fraud
- Provide the DPMED with a high-performance software to register medicines

Quality control

Main challenges: The LNCQ is not prequalified, Lack of National Quality Assurance Guidelines, Lack of quality control for medicines distributed in the private sector

Specific objective 4: Conduct quality control of 95% of medicines and other health commodities used in Benin by 2020

Strategy 6: Strengthen LNCQ capacities to meet international norms in force

Activities:

- Develop a National Quality Control Policy (PNCQ)
- Disseminate the PNCQ
- Provide the LNCQ with reagents and analysis equipment annually
- Hire at least four analysts by the end of 2016
- Retrain/Train XXX staff in Good Laboratory Practice (GLP)
- Organize a workshop to disseminate the laws in force
- Disseminate laws in force through media (Official Journal, television, and radio)

Pharmacovigilance

Main challenges: Lack of a national pharmacovigilance system
Specific objective 5: Implement a functioning pharmacovigilance system by 2020

Strategy 7: Strengthen DPMED capacity in pharmacovigilance (PV)

Activities:

- Complete the process currently under way to draft regulatory acts
- Organize a workshop to validate PV regulatory texts
- Train/Retrain XXXX health staff in reporting adverse events
- Evaluate the implementation of the national PV system every two years

Coordination

Main challenges: Operational problems in subcommittees, Lack of an internal mechanism for the DPMED to implement CNAPS recommendations, No legal status for zone distribution warehouses (DRZs)

Specific objective 6: Ensure that the National Health Products Supply Chain Committee (CNAPS) is 100% functional by 2020

Strategy 8: Strengthen the coordination between various actors

Activities:

- Develop a monitoring mechanism for the implementation of CNAPS recommendations
- Monitor the implementation of CNAPS recommendations
- Develop and validate the legal statute for zone distribution warehouses (DRZs)

Financing

Challenges: Misdirection of public sector medicines to the private sector, Noncompliance with the policy of State-set prices, Insufficient financial resources made available by the State to acquire supplies

Specific objective 7: Raise awareness among 95% of the main supply chain actors regarding rational use of medicines.

Strategy 9: Strengthen management capacities

Activities:

- Organize on-site awareness-raising sessions for supply chain staff
- Verify effective application of disciplinary measures for any regulatory violation
- Advocate for considerable State funding for medicines through the Minister of Health
- Recover costs related to the free-access policy

Challenges: Inadequate number of pharmacists at all levels of the health pyramid, Insufficient motivation among health professionals, Inadequate number of health logisticians.

Specific objective 8: Ensure availability of human resources in terms of quality and quantity in at least 95% of national structures involved in the supply chain by 2020

Strategy 10: Strengthen human resources in terms of quality and quantity

Activities:

- Provide logistics training to XXX DRZ managers and other people involved in the supply chain
- Advocate through the Minister of Health to hire at least 10 pharmacists per year for the public sector by 2020
- Advocate through the Minister of Health to appoint XXXX health professionals (planner, epidemiologist-/public health physician, statisticians, and monitoring-evaluation specialist)

2. Quantification

<u>Main challenges</u>

Analysis of the "Forecasting" and "Supply Planning" links found the following weaknesses:

Forecasting:

No needs forecasting software, No product forecasting procedures, Poor quality of logistics data, No national quantification procedures describing the entire quantification process, Inadequate monitoring of quantification assumptions.

<u>Opportunities</u>: Existence of the DHIS2 and Technical and Financial Partners (TFPs), Existence of procedures for other programs, Existence of an initiative to develop national procedures manual for management of supplies, Existing data collection tools and LMIS, Existence of a national procurement guideline, Existence of a monitoring and evaluation mechanism

Overall Objective 3: Improve the process for forecasting, supply planning, and procurement of health commodities to 95% efficacy by 2020

Specific objective 15: Ensure quantification of health commodities with integrated software by 2020

Strategy 19: Reactivate the quantification process for health commodities

Activities:

- Conduct a situational analysis of the existing software packages for quantification
- Put in place an integrated software package to take beneficiaries' specifications into account
- Train XXX beneficiaries to use the software

Specific objective 16: Improve the quantification process for maternal and child health commodities by 2020

Strategy 20: Improve the quantification process for maternal and child health commodities

Activities:

- Develop the procedure manual
- Validate the manual
- Disseminate the manual
- Train XXX users

Specific objective 17: Improve quality of logistics data to 95% by 2020
Strategy 21: Reactivate the logistics management information system

Activities:

- Reorganize the information feedback circuit
- Implement data collection and reporting tools for quantification
- Train XXX actors on quantification data collection and reporting
- Implement an LMIS monitoring and coordination unit within the CNAPS

Specific objective 18: Implement a national quantification procedure by 2020

Strategy 22: Implement a national procedure for quantification and the evaluation thereof

Activities:

- Develop a procedures document for the national quantification
- Validate the quantification procedures manual
- Disseminate the quantification procedures manual to XXX beneficiaries
- Regularly evaluate quantification assumptions and make adjustments

Supply planning

Main challenges: Noncompliance with procurement timelines, No contingency plan to respond to gaps, No standardized software for planning, Lack of financing and an onerous bureaucratic administrative process for purchases using the National Budget (NB)

Opportunities: National integrated LMIS under way, Existence of the DHIS2 and Technical and Financial Partners, Existence of budget line items for some programs

Specific objective 19: Make the procurement timelines available to each procurement officer by 2020

Strategy 23: Disseminate procurement timelines

Activity:

- Create a directory that includes delivery timelines for all procurement officers
- Disseminate this directory to XXX beneficiaries
- Regularly update these timelines

Specific objective 20: Have a contingency plan to prevent risks related to procurement of health commodities.

Strategy 24: Strengthen product security

Activities:

- Include a contingency plan procedure in the national standard procedures manual for health commodities management
- Train XXX actors from the supply chain on how to develop a contingency plan

Specific objective 21: Ensure supply planning of health commodities with an integrated software by 2020.

Strategy 25: Reactivate the supply planning process for health commodities

Activities:

- Conduct a situational analysis of the existing software packages for supply planning
- Implement an integrated software package that takes beneficiaries' specifications into account
- Train beneficiaries to use the software

Procurement

Main challenges: Noncoverage of funding gaps

Opportunities: Existence of partners

Specific objective 22: Ensure that acquisitions of subsidized health commodities are available in a timely manner by 2020

Strategy 26: Transfer health commodity acquisitions from the National Budget (NB) to the CAME

Activities:

- Extend the allocation of funds for acquiring health commodities to all programs

- Advocate to obtain a special exemption so the CAME can acquire health commodities acquired from the NB
- Ensure financial resources are available on time for the acquisition of health commodities from the NB
- Advocate among TFPs and the Government to cover financial gaps

Coordination of quantification and procurement

Main challenges: Lack of coordination in the quantification process, Lack of coordination in taking small quantities into account

Opportunities: Existence of the CNAPS, Existence of the ACAME (Association Africaine des Centrales d'achats de Médicaments Essentiels)

Specific objective 23: Ensure proper coordination of the quantification process by 2020

Strategy 27: Strengthen the coordination of quantification

Activities:

- Designate representatives from structures set out in the decree and set up a technical subcommittee for quantification
- Verify the functionality of the subcommittees
- Advocate to include the issue of bulk purchasing as a priority

Human resources

Specific objective 24: Ensure good coordination of the quantification process by 2020

Strategy 28: Ensure availability of qualified human resources

Activities:

Include quantification activities in basic training (preservice), Allocate qualified human resources to quantification activity
Storage and warehousing operations management

Overall Objective 2: Improve storage and distribution conditions for health commodities in the CAME headquarters warehouse, 3 CAME regional warehouses, 34 DRZs, XXX hospitals, and XXX health centers by 2020

Main challenges

Analysis of the "Storage" and "Warehousing Operations Management" links found the following weaknesses:

Physical infrastructure and materials handling equipment:

No space set up for medicine delivery (storage area overlaps with delivery area), No space designated for expired product management, Limited space to store cold chain products, No materials handling equipment

<u>**Opportunities:**</u> Support from Technical and Financial Partners (TFPs), Stability and political will

Specific objective 9: Strengthen commodity storage capacities at all levels (CAME, 3 CAME regional warehouses, 34 DRZs, XXX hospitals, and XXX health centers) by 2020

Strategy 10: Upgrade and expand storehouse for health commodities

Activities:

- Develop standards/norms for the organization and operation of pharmacies and storage areas for health commodities in the public sector
- Conduct an inventory of pharmacies and storage areas in the public sector
- Conduct a quantitative needs assessment incorporating the evaluation
- Advocate among donors to mobilize additional resources
- Upgrade XXX storehouses so they meet standards/norms

Strategy 11: Provide storehouses with suitable materials handling equipment

Activities:

- Inventory the materials handling equipment
- Conduct a quantitative needs assessment incorporating the evaluation
- Advocate among donors to mobilize additional resources
- Provide XXX materials handling equipment units at the CAME, CAME warehouses, DRZs, hospitals, and health centers in the public sector

Storage conditions

Challenges: There is no effective system to monitor temperature and humidity conditions in peripheral structures

Specific objective 10: Ensure temperature and humidity monitoring in health commodity storage areas at all levels (CAME, 3 CAME regional warehouses, 34 DRZs, XXX hospitals, and XXX health centers) by 2020

Strategy 12: Implement standard operating procedures (SOPs) and tools to ensure monitoring of temperature and humidity conditions

Activities:

- Develop SOPs for monitoring temperature and humidity conditions
- Disseminate the SOPs among actors
- Advocate among donors to mobilize additional resources
- Provide XXX temperature and humidity recorders at the CAME, CAME warehouses, DRZs, hospitals, and health centers in the public sector

IT support for the management of warehousing operations

Challenges: Proper management of product placement in storehouses, Consumption data at the peripheral level (HCs) are not sent to the CAME, No management software used for product receiving, Poor management of inventory monitoring indicators

Opportunities: Support from Technical and Financial Partners (TFPs), Stability and political will

Specific objective 11: Improve the management of medicine placement in CAME warehouses and its regional warehouses by 2020

Strategy 13: Implement SOPs for product placement management in storehouses

Activities:

- Inventory/Analyze the gap in the current management software for health commodities inventory in terms of addressing
- Conduct a quantitative needs assessment incorporating the evaluation
- Complete the physical addressing of storehouses
- Activate the software's addressing function

Specific objective 12: Improve computerized inventory management at the peripheral level to make consumption data available for 95% of sites at the central level by 2020

Strategy 14: Computerize inventory management at the peripheral level

Activities:

- Equip XXX health centers (HCs) with IT equipment
- Implement software for delivery and inventory management at the HC level
- Train XXX actors from HCs to use the software

Strategy 15: Monitor and evaluate supply chain (SC) performance

Activities:

- Develop performance monitoring indicators for the SC
- Train XXX health actors on the monitoring indicators
- Periodically evaluate SC performance (quarterly)

3. Transport and distribution

Analysis of the "Transport and distribution" link found the following weaknesses:

Challenges: Lack of suitable means of transportation for medicine delivery, No distribution schedule for commodities

Opportunity: Support from Technical and Financial Partners (TFPs), Stability and political will

Specific objective 13: Ensure the availability of at least 80% of logistic means adapted to active distribution throughout the country by 2020

Strategy 16: Implement an active distribution policy according to the health pyramid

Activities:

- Design an active distribution policy for medicines according to the health pyramid level
- Provide the central and intermediate level with XXX transportation units in accordance with the distribution policy (4 CAME [headquarters and regional warehouses], 34 DRZs).
- Establish a schedule based on consensus with actors in the health pyramid

4. Management of unusable products

Analysis of the link "Management of unusable products" found the following weaknesses:

Challenges: Unavailability of a standard operating procedure for the destruction of unusable health products, No equipment for the destruction of unusable products, Inadequate funding for the destruction of unusable products, Staff in facilities are not trained in managing unusable products

Opportunities: Support from Technical and Financial Partners (TFPs), Stability and political will

Specific objective 14: Decentralize the destruction of unusable products in XXX sites throughout the country by 2020

Strategy 17: Implement standard operating procedures (SOPs) for the management of unusable health products

Activities:

- Design and disseminate a national policy for the management of unusable products
- Develop SOPs for the management of unusable health products
- Disseminate SOPs for the management of unusable health products (XXX beneficiaries)
- Train XXX actors in best practices in inventory management to minimize expiration and costs related to destruction

Strategy 18: Mobilize resources to make destruction equipment available

Activities:

- Conduct an inventory
- Suggest types of equipment by level
- Estimate the cost of destruction equipment
- Train XXX health actors how to use and maintain destruction equipment