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The Federal Democratic Republic of Ethiopia
Pharmaceuticals Fund and Supply Agency

Ethiopia: National Survey of the Integrated Pharmaceutical Logistics System

FEBRUARY 2015

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Ethiopia: National Survey of the Integrated Pharmaceutical Logistics System

USAID | DELIVER PROJECT, Task Order 4

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Abstract

Since 2009, the Pharmaceuticals Fund and Supply Agency (PFSA) has implemented the Integrated Pharmaceutical Logistics System (IPLS) for essential health commodities in the public sector. This report describes the findings from a survey of supply chain performance in a representative sample of public-sector health facilities in Ethiopia. In addition to findings on the status of supply chain management in facilities and the availability of tracer health commodities, the report also outlines future recommendations to further improve system performance.

Cover photo: A pharmacist at the Tulu Bolo hospital store, Oromia Region. Photo by Audrée Montpetit.

THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
PHARMACEUTICALS FUND AND SUPPLY AGENCY
Tel: +251.011.275.1770
Fax: +250.011.275.2555
P.O. Box 21904
Addis Ababa, Ethiopia
Email: pfsa@ethionet.et

USAID | DELIVER PROJECT
John Snow, Inc.
1616 Fort Myer Drive, 16th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
Email: askdeliver@jsi.com
Internet: deliver.jsi.com

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Acronyms

AMC	average monthly consumption
ART	antiretroviral therapy
CSA	Central Statistical Agency
DMPA	depot medroxyprogesterone acetate (Depo-Provera)
DU	dispensing unit
ECLS	Ethiopia Contraceptive Logistics System
FEFO	first-to-expire, first-out
FMOH	Federal Ministry of Health
GTP	Growth and Transformation Plan
HCMIS	health commodity management information system (Hub and/or Facility Edition)
HEW	health extension worker
HPMRR	Health Post Monthly Report and Request
IFRR	Internal Facility Report and Request
IPLS	Integrated Pharmaceutical Logistics System
IUCD	intrauterine device
LIAT	*Logistics Indicators Assessment Tool*
LMIS	logistics management information system
MCH	maternal and child health
MDG	Millennium Development Goal
OI	opportunistic infection
OJT	on-the-job training
OPD	outpatient department
ORS	oral rehydration salts
PFSA	Pharmaceuticals Fund and Supply Agency
PIMS	Pharmaceutical Information Management System
PLMP	Pharmaceutical Logistics Master Plan
RDF	revolving drug fund
RHB	Regional Health Bureau
RHCS	reproductive health commodity security

RHZE	[combination of four drugs—rifampicin/isoniazid/pyrazinamide/ethambutol
RRF	Report and Requisition Form
SC4CCM	Supply Chain for Community Case Management project
SCMS	Supply Chain Management System
SDP	service delivery point
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOP	standard operating procedure
TB	tuberculosis
TOT	training-of-trainers
UNFPA	United Nations Population Fund
USAID	U.S. Agency for International Development

Foreword

Since its establishment in 2007, Pharmaceutical Fund and Supply Agency (PFSA),the lead organization managing the health care supply chain of the country, has been working to ensure the availability, accessibility, and affordability of essential medicines with appropriate quality, safety, and efficacy. To achieve these goals, PFSA—supported by its partners—has designed and implemented various innovative programs. The Integrated Pharmaceutical Logistics System (IPLS) is one of the major interventions to create a strong, unified, healthcare supply chain, to connect all levels of the supply chain, and to provide accurate and timely data for decisionmaking.

To initiate IPLS, a number of interventions were implemented, including (1) large-scale capacity building trainings for health facilities and higher levels, (2) a program of supportive supervision, (3) physical improvements to warehouses and storerooms, and (4) implementing paper-based and automated logistic information management systems (LMIS). Currently, with this support, more than 3,000 health facilities are able to implement IPLS.

The survey results show that the IPLS has already brought significant improvements to the supply chain in Ethiopia, although much more remains to be done. The survey findings and recommendations provide valuable insight into the status of IPLS, including access to essential medicines, and the use of the LMIS formats and storage conditions. The information is expected to facilitate evidence-based planning, thus contributing to a stronger and more efficient supply chain; increased medicine availability; and, ultimately, improved healthcare outcomes.

We strongly encourage all stakeholders involved in the healthcare supply chain to make the best use of this report in their planning and monitoring activities. The information will be particularly useful to government institutions and departments, health development and implementing partners, training and research institutions, as well as other national and international stakeholders.

PFSA acknowledges with gratitude the financial and technical support from the USAID | DELIVER PROJECT that made this work a reality. Thanks also go to JARCO, who recruited and trained the data collectors and implemented the survey. We thank everybody involved in the design and implementation of this study; in particular, the data collectors and the informants who gave their time. Finally, we thank the dedicated personnel involved in delivering medicines to the population: staff of PFSA and partner organizations, and the dedicated pharmacy and medical staff, including the thousands of health extension workers. We hope these findings will make the jobs of all working in the healthcare sector easier.

Meskele Lera
Director General
Pharmaceutical Fund and Supply Agency

Paul Dowling
Country Director
USAID | DELIVER PROJECT

Executive Summary

The Federal Ministry of Health (FMOH) has been working to ensure an efficient and high-performing healthcare supply chain that will ensure equitable access to affordable medicines for all Ethiopians. In past years, significant progress has been made, although various challenges remain—an inadequate supply of quality and affordable essential pharmaceuticals, poor storage conditions, and weak stock management—resulted in high levels of waste and stockouts. To address these challenges, the FMOH initiated a comprehensive supply chain strategic planning process, which led to the Pharmaceuticals Fund and Supply Agency (PFSA) being established in 2007.

In 2009, as part of a major intervention to improve the supply chain situation in the country, PFSA, in partnership with its support partners—the USAID | DELIVER PROJECT, Supply Chain Management Systems (SCMS), and others in the sector—developed and began implementing the Integrated Pharmaceuticals Logistics System (IPLS). To help health facilities effectively implement IPLS, PFSA and partners designed various interventions, including (1) designing and implementing electronic- and paper-based logistics management information systems (LMISs), (2) building the logistics capacity of FMOH and PFSA staff at all levels, (3) supporting facilities and warehouses through improved infrastructure, (4) monitoring, and (5) evaluation and supportive supervision for facilities.

Routine monitoring reports show that IPLS is improving information recording and reporting, storage, and distribution systems, as well as the availability of essential commodities at service delivery points (SDPs). However, the IPLS has not had an official, representative survey to assess the progress made to this point and identify weaknesses. Therefore, PFSA and the USAID | DELIVER PROJECT conducted a survey to measure the progress of system performance for public-sector health facilities—hospitals, health centers, and health posts.

To collect information from the randomly selected 270 health facilities, a cross-sectional quantitative study was conducted between December 2013−January 2014 in all regions and city administrations of Ethiopia. Data were collected by observation, physical inventory, assessment of facility records, and structured interviews with health-facility pharmacy personnel. The *Logistics Indicators Assessment Tool (LIAT)*, modified for the Ethiopian context to include IPLS-specific implementation indicators, was used to collect the required information. EpiCollect was used to collect data by mobile phones. Data cleaning and analysis were conducted using SPSS for Windows 19. Descriptive statistics, including frequencies, cross tabulation, averages, and percentages, were the main output for analysis. A summary of the key findings, conclusions, and selected recommendations are presented below.

Key Findings

The survey result indicated that the availability of blank recording and reporting formats—bin cards, Internal Facility Report and Resupply Form (IFRR), and Report and Requisition Form (RRF) is high at hospitals (above 90 percent),but declines farther down the supply chain (close to 80 percent at health centers and 40 percent at health posts). Across all levels, utilization of bin cards for the products included in the study was reasonable, although some discrepancies were observed at the level of facility and product types. Again, for the products assessed, the average use of bin cards are

lowest at the health post–level (24 percent) compared to hospitals (73 percent) and health centers (64 percent). Overall, in the 30 days preceding the survey, about 60 percent of the facilities had updated bin cards for the selected pharmaceuticals.

Overall, data accuracy of bin cards was found to be low for most of the products assessed. However, the data show significant increases when adjusted for 10 percent accuracy (to account for discrepancy while converting to the default unit). On average, nearly 77 percent of hospitals and health centers had bin cards within 10 percent accuracy. For health posts, the average was about 51 percent.

The data indicate a high rate of IFRR use among the facilities surveyed. In phases I and II health facilities, use of IFRR in at least one dispensing unit was close to 91 percent in hospitals and 87 percent in health centers. The percentage is lower for phase III health centers (77 percent).

The survey results show variations in the use of RRF by phase of IPLS implementation. The utilization of RRF was high (97 percent) among phases I and II facilities, both in hospitals and health centers. This was not the case for phase III health centers, where RRF use was only 54 percent. Likewise, about half the health posts surveyed used the monthly reporting format Health Post Monthly Report and Request (HPMRR) to request commodities from the resupplying health center. Overall, regardless of the type of facility, completeness of the RRF was found to be good: reports were completed for all programs in at least 85 percent of the facilities. However, data quality of the RRF is an issue in most health facilities. The exact accuracy of RRF data was between 40 and 50 percent for most of the products; with an average of 46 percent. However, results almost doubled (82 percent) when the calculation was adjusted to near accurate—within 10 percent accuracy (to account for logical rounding toward minimum unit of issue pack size at PFSA).

The results show that, regardless of the type of product, more than 80 percent of both hospitals and health centers usually receive products requested within one month or less. However, the perceived order fill rate—the percentage of items that are filled, based on the ordered quantities with the correct products—for both program (37 percent) and revolving drug fund (RDF) (14 percent) products was low. Likewise, for most products assessed, the percentage of facilities filled with the quantities ordered were about 60 percent at both the hospital- and health center–level. Note that there are many reasons why a facility may not be supplied with the quantity ordered. Shortages is one, but it is also possible that facilities were ordering more or less than the required or correct quantity; the survey did not assess that point.

The survey result from interviews with facility personnel indicated that approximately half the facilities placed at least one emergency order in the three months preceding the survey; with a higher percentage of hospitals (68 percent) than health centers (43 percent) and health posts (38 percent).

About 87 percent of pharmacy personnel and health extension workers (HEWs) managing products had received training on how to calculate reorder quantities, with the lowest percentage for health posts (74 percent) and phase III health centers (71 percent). The survey also revealed that most facilities are receiving supportive supervision from higher levels. Of the facilities that received a visit, nearly all the hospitals (97 percent) and most health centers (85 percent) indicated that the supervision included store management/logistics issues. At the health post–level, among those receiving supervision, only about half (53 percent) reported that supervision included logistics-related issues.

About half the assessed facilities (55 percent) met at least 80 percent of the storage criteria (9 out of 11); with health center stores (63 percent) higher than hospitals (43 percent) and health posts (29 percent).

Overall, the majority of the health facilities had most of the essential pharmaceuticals in stock on the day of the visit; availability was above 90 percent for most products—at all levels of the facilities and IPLS implementation levels. At the health post–level availability was generally lower. The picture is similar for availability during the previous six months, although stockout percentage increased compared to data on the day of the visit. For all levels, the frequency of stockouts in the past six months was similar for most products—approximately 1.5 times. The average duration of stockouts varied widely across facility type and product. Across products, most facilities are not stocked according to the recommended 2–4 months of stock. For almost all products assessed, overstocking is more common than understocking.

Recommendations

- *Availability of formats is a challenge.* The relatively high number of facilities without records like bin cards and RRFs (for example, 20 percent of health centers and 50 percent of health posts did not have bin cards) points to the need for a sustainable funding mechanism to print these forms at the central level and then distribute them regularly to facilities, based on need.
- *The quality of recordkeeping needs to improve.* The utilization of various LMIS formats, while reasonably good, can be improved, particularly at health post–level: only 35 percent of health posts and 66 percent of health centers were keeping a bin card for depot medroxyprogesterone acetate (DMPA); only 21 percent of health posts and 43 percent of health centers had an accurate balance on their bin cards. To improve the skills of health facility staff, intensified efforts, through on-the-job training (OJT) or supervision, on how to complete the forms and records, is needed. Feedback mechanisms for RRFs and using the reports for informed decisionmaking by the health facilities management could also help address this gap.
- *More needs to be done for health posts.* Considering the negligible logistics support they receive, the performance of health posts is encouraging. However, it is lower than other levels of health facilities. Health posts are less likely to have forms and less likely to use them correctly; HEWs are less likely to have received logistics training. It is not surprising that while 97 percent of health centers had co-trimoxazole in stock, only 42 percent of health posts had it in stock. All concerned parties need to strengthen the newly initiated Health Post Resupply Initiative, which includes capacity building through OJT and other approaches, and providing the necessary LMIS, formats.
- *HEWs need formal logistics training.* Only 7 percent of HEWs reported receiving formal training to complete logistics forms. To build on existing initiatives to provide mentoring and OJT to HEWs, mechanisms that ensure the current and new HEWs receive direct training in logistics are also needed. Training can be integrated refresher training, and/or incorporating logistics into curricula for newly recruited HEWs. Just one half-day training (one day would be better) focused on practical skills—using bin cards and HPMRR, for example—would significantly improve work at the health posts.
- *Supportive supervision is working, but many sites are missing out:* Results show that facilities that are supported for relatively longer periods (phases I and II) show better performance than those that only receive limited support (phase III). However, partners cannot continue supporting the

same sites while new sites have never received support. Strategies, including graduation of matured facilities, should be designed to shift resources and support to phase III, including newer health centers and health posts.

- *Health facility stores need improvement.* The survey results show that the storage condition for a significant percentage of health facilities did not meet the standard criteria. The FMOH, PFSA, Regional Health Bureaus (RHBs), and partners have been supporting health facilities to upgrade their storage conditions by supplying various types of shelves and other warehouse equipment. This effort should be strengthened and resource mobilization from other sources should be identified to reach more health facilities. Some of the storage issues could also be addressed by reinforcing good logistics management practices and maintaining key storage conditions, such as first-to-expire, first-out (FEFO) and visibility of identification labels and expiry dates.

- *Direct distribution is reaching many facilities but needs to reach more.* PFSA have done a great job with direct delivery: 71 percent of health centers sampled reported having program items delivered. But, more work is needed to increase this percentage.

- *Medicine availability is generally good and has improved dramatically.* The survey demonstrates significant improvements in stock availability at all levels of the health facilities. However, the availability of some items is still low and needs further assessment to identify causes.

- *However, overstocking is a concern.* For the items assessed, stocking products within the recommended minimum-maximum seems to be an issue in most health facilities. Overstocking is a particular concern. Almost 90 percent of facilities were overstocked with ciprofloxacin. To ensure resources are used wisely and waste is minimized, reinforcing system standards and strictly following the IPLS standard operating procedure (SOP) in requesting and resupplying are required.

- *Involving all stakeholders is necessary to sustain the system*. System sustainability is always an issue when implementing a program. To sustain the system, advocacy and the involvement of all stakeholders—particularly woreda and zonal health officials—in monitoring and following up the implementation of the system should be strengthened.

- *Standard system needed for documenting and reporting expiry data from facilities:* A system to track expiry information at the health facility–level should be designed and implemented because expiry is one of the performance indicators that show the supply chain efficiency.

- *More focus should be given to monitoring and evaluation of IPLS, including more surveys*. This was the first-ever comprehensive, quantitative study of IPLS implementation. This study—with the same or similar indicators (to enable comparisons over time)—should be repeated, perhaps biannually, complemented with smaller surveys and routine monitoring for certain key indicators. PFSA should also define key performance indicators for IPLS.

Background

The Federal Ministry of Health (FMOH) has been working to ensure an efficient and high-performing healthcare supply chain that ensures equitable access to affordable medicines for all Ethiopians. Recently, significant progress has been made, although various challenges remain, including an inadequate supply of quality and affordable essential pharmaceuticals, poor storage conditions, and weak stock management, which has resulted in high levels of waste and stockouts. To address these challenges, the FMOH initiated a comprehensive supply chain strategic planning process; this led to the creation of the Pharmaceuticals Fund and Supply Agency (PFSA) in 2007.

To address these challenges, the FMOH initiated a comprehensive supply chain strategic planning process, emphasizing the integration of all products into one supply chain. In late 2006, the Ministry approved the Pharmaceutical Logistics Master Plan (PLMP); in 2007, the PFSA was established by proclamation. The agency mandate is to "avail affordable and quality pharmaceuticals sustainably to all public health facilities and ensure their rational use." PFSA began active implementation of its new mandates in early 2009.

In 2009, to execute this mandate, PFSA, in partnership with its support partners—the USAID | DELIVER PROJECT, Supply Chain Management Systems (SCMS), and others in the sector—developed and began implementing the Integrated Pharmaceuticals Logistics System (IPLS). Prior to the beginning of IPLS, various health programs—including family planning, HIV and AIDS, tuberculosis (TB), and malaria—used their own vertical logistics systems to deliver medicines. While individual programs helped in the short term, gaps remained and the vertical systems were not sustainable. With the introduction of IPLS, PFSA established an integrated health commodity supply chain that would include all health program commodities; it would also connect all levels with accurate and timely data for decisionmaking.

To prepare health facilities for implementing the IPLS, PFSA—in collaboration with partners—developed a standard training curriculum for the new process. Through training-of-trainers (TOTs), 200 technical staff from PFSA, the Regional Health Bureaus (RHBs), and other logistics partners learned how to deliver the IPLS training; todate;almost10,000 health professionals, from all nine regions and two city administrations, have been trained by PFSA and its partners. To reinforce the training, supportive supervision visits were made to health facilities; essential reference materials, including standard operating procedures (SOPs) and standard recording and reporting forms, were printed and distributed.

In addition, during the last three years, PFSA with the USAID|DELIVER PROJECT and the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) project jointly upgraded nearly 450 health facility stores with shelving and warehouse equipment, while SCMS supported PFSA with racking and equipment for 10 newly constructed warehouses.

Using a phase-based approach, IPLS is now implemented in most of the public health facilities in the country. Phase I—antiretroviral sites started implementing the IPLS in FY2011; phase II facilities—preventing mother-to-child transmission sites, in FY2012; and phase III facilities—smaller health centers—started IPLS in FY2013.

Routine monitoring reports show that IPLS is improving information recording and reporting, storage and distribution systems, as well as the availability of essential commodities at SDPs. However, the

IPLS has not had an official, representative survey to assess the progress made to this point. Therefore, PFSA with financial and technical support from the USAID | DELIVER PROJECT, conducted a survey to measure system performance at public-sector health facilities—hospitals, health centers, and health posts. The findings from the survey will help provide information on the level of the IPLS implementation; it will help determine future priorities and future direction.

Country Profile

Demographic and socioeconomic situation: Ethiopia is the 10th largest country in Africa, covering 1,104,300 square kilometers. The 2012 total population estimate from the Central Statistical Agency (CSA) was 84.3 million, which makes Ethiopia the second most populous country in the African continent, after Nigeria. According to the 2007 census, the country is among the least urbanized countries in the world: 83.6 percent live in rural areas, while only 16.4 percent of the total population lives in urban areas.

Ethiopia has shown impressive economic growth over the last ten years, although the per capita income of U.S. $410 remains below the sub-Saharan average. Economic growth brought positive trends in reducing poverty, in both urban and rural areas. While 38.7 percent of Ethiopians lived in extreme poverty in 2004–2005; five years later, the figure was 29.6 percent, a decrease of 9.1 percentage points, as measured by the national poverty line of less than U.S. $0.6 per day. The Growth and Transformation Plan (GTP) target is to reduce this to 22.2 percent by 2014–2015.

Health system background: The major health problems of the country remain largely preventable: communicable diseases and nutritional disorders. Widespread poverty, with low income and education levels (especially among women), inadequate access to clean water and sanitation facilities, and poor access to health services have contributed to the high disease burden in the country. However, in recent years, Ethiopia has made significant improvements in the overall health condition of the population. Recently, it achieved the Millennium Development Goal (MDG) for reducing child mortality; the country is on track to achieve goals forgive and AIDS and malaria control. Good progress has also been recorded in the average life expectancy at birth, which increased from 51 years (50 for males and 53 for females) in 2000 to 64 years (62 for males and 65 for females) in 2012.

Despite major improvements in the health of the population over the last decade, the Ethiopian people still face high rates of death and disease. About 350,000 children die each year and more than 90 percent of these deaths are from preventable or treatable causes—pneumonia, diarrhea, malaria, malnutrition, HIV and AIDS, and others. Ninety percent of births occur without the assistance of a skilled health professional; as a result, approximately 19,000 new mothers die each year. High fertility and lack of access to quality services result in 676 pregnancy-related maternal deaths for every 100,000 live births—one of the world's highest rates. Chronic malnutrition also remains a persistent underlying cause of child mortality, with 44 percent of children under-5 suffering from childhood stunting.

General and Specific Objectives

The general objective of the survey was to provide information on the level of IPLS implementation and to measure the system performance at health facilities. The survey also assessed the availability of selected essential pharmaceuticals.

The specific objectives of the survey were to—

- Assess selected inventory management and logistics system management practices within the system, including the use of recording and reporting formats, transport and distribution, supervision, and training.

- Collect stock status information, including stock availability, stockout duration, stock on hand, product expiries, and storage conditions.
- Assess the logistic system performance, such as order fill rate and wastage rate.
- Identify key issues and challenges in IPLS implementation to help determine the next steps needed for logistics system improvements.

Scope

The scope of the survey included the—

- situation for supply chain management, including availability of tracer commodities
- public health supplies, with a focus on essential medicines that include both program and revolving drug fund (RDF) commodities
- public-sector health facilities: hospitals, health centers, and health posts
- all regions of Ethiopia.

Methodology

Study Design

A cross-sectional quantitative study was conducted in all regions and in all city administrations of Ethiopia. The study was conducted at the SDP-level—hospitals, health centers, and health posts.

Source of Data

The sources of data for the study were health facility records and pharmacy staff working in the selected health facilities. The primary data were collected by observation, physical inventory, assessment of facility records, and structured interviews with health-facility pharmacy personnel.

Sampling

To determine the sample size required for the survey—the 95 percent confidence interval—the design effect of 1.2 and 10 percent non-response rate are taken as an input. The estimation formula for the sample size was $n=\frac{3.84\ f\ q}{V^2\ p}$ where—

- **n** is the sample size used for the calculation
- **p** is the anticipated percentage of facilities with the attribute of interest; here the set availability of essential medicines and supplies is estimated at 50 percent with a confidence interval of p ±.15p, at the 95 percent level of confidence. Then, relative error or coefficient of variation is 15 percent or 0.15.
- **q** is equal to 1− p
- ***f***is the design effect
- **V 2** is the relative variance (square of the relative error), and, is (.15)2 or 2 *V*.0225.and
- **3.84** is the square of the normal deviate (1.96) needed to provide an estimate at the 95 percent level of confidence.

The calculated sample size is 205. In addition, although IPLS considers health posts one of the dispensing units of the resupplying health centers, they have some unique characteristics. Thus, 40 health posts (one in five of the sampled health centers) were included in the sample. By including 10 percent non-response rate, the final sample is estimated at approximately 270.

The sampling procedure adopted in this study was the probability sampling method, which provides each member of the target group with equal non-zero probability for being selected in the sample. The complete list of public facilities—hospitals and health centers—from the FMOH was used as a sampling frame. Hospitals and health centers were first stratified according to their IPLS implementation phase and by region. The health facilities were allocated to the respective regions by the power allocation sampling technique, which gives a higher chance to regions with a small number of health facilities. Then, simple random sampling technique was applied to select health facilities—hospitals and health centers—from each stratum. Health posts were selected using a simple random sampling method through randomly selected health centers (all health posts are associated with a health center).

See appendix E for a complete breakdown of sampled health facilities, by region, and a list of all the included facilities.

Data Collection Instrument

The *Logistics Indicators Assessment Tool (LIAT),* a standardized quantitative data collection tool developed by the USAID | DELIVER PROJECT, and applied in many countries around the world, was selected as the starting point to develop the instrument. The tool was adapted to the Ethiopian context, including the IPLS-specific implementation indicators. Before the tool was finalized, relevant comments from data collector training and pre-testing were incorporated. The final Amharic version of the tool, programmed into smartphone using EpiCollect software, was used to collect data from sampled health facilities. See appendix D for a copy of the final LIAT used for this survey.

Indicators

A set of standard indicators were selected to measure the supply chain performance and stock status of tracer commodities. Specifically, the survey collected quantitative information on (1) the performance of the logistics system, and (2) the availability of selected essential commodities. The survey also assessed specific activities: ordering, reporting, monitoring and supervision, and storage conditions. See table 1 for a list of select indicators; see appendix B for a list of the full set of indicators.

Table 1. Indicators Used to Assess the IPLS Implementation

Indicators	Data Source
Percentage of facilities with bin cards available and updated by product	Presence of bin cards and evidence of utilization in facilities and stores
Percentage of facilities with accurate stock balances on bin cards	Comparison of bin card balance and physical inventory count
Percentage of facilities that completed and submitted an RRF report for the most recent reporting period	Presence of RRF reports and evidence of utilization in facilities and stores
Percentage of facilities with accurate RRF reports	Comparison of the stock balance on the most recent RRF report and on the bin card
Percentage of personnel trained in supply chain management and type of training received	Respondent
Percentage of facilities receiving logistics supervision within a reasonable amount of time	Respondent
Type of transportation used for deliveries/collection	Respondent
Percentage of sites stocked out of product at time of visit	Bin card records, respondent, and physical inventory
Percentage of sites stocked out of product in last 6 months	Records and respondent
Average number of days stocked out in 6 months	Records and respondent
Percentage of sites stocked according to plan; months of supply on hand	Average monthly consumption, physical count of product at health facilities
Percentage of facilities meeting all (or a desired percentage) of the storage conditions	Visual observation

Data Collection

An independent consultancy firm was hired to collect data from the sampled health facilities. Twelve survey teams were recruited, based on their academic standard, previous experience in conducting similar studies, and their interpersonal skills. Each team consisted of two enumerators and one supervisor.

Supervisors and enumerators in Addis Ababa had comprehensive training from November 23–29, 2013. Five days was scheduled for in-classroom training, one day for pre-test, and one day for feedback and comments. The training focused on how to manage the data collection process and the field editing techniques, and to learn to complete the instruments. After familiarizing the team with the tool, pre-testing of the questioner was also done. The pre-test helped evaluate the clarity and appropriateness of certain concepts of the questionnaire and the mastery of the interviewers with the concepts. The pre-test was done in 12 health facilities that were not part of the main survey. The changes identified by participants during the training and pilot tests were incorporated into the tool.

Data was collected from December 5, 2013−January 2, 2014. For each data collection team, a team leader was assigned to oversee data collection. In addition, PFSA and USAID | DELIVER PROJECT staff joined the supervisory teams to ensure adherence to quality standards, and to troubleshoot any problems.

Data Management and Analysis

To collect data by mobile phone, surveyors used EpiCollect—a mobile application that transfers data through pre-sent forms on smart phones and it enables transmission of data directly through the Internet. SPSS for Windows 19 version was used for the data cleaning and analysis. The data cleaning and editing focused on checking whether the assigned value for each case was legitimate, and focused on the logical consistency and structure of cases.

Descriptive statistics—including frequencies, cross tabulation, averages, and percentages—were the main output for analysis. For the analysis, *not applicable* and *missing* responses were removed from the denominators. Results were disaggregated by type of facility and IPLS implementation phases.

Quality Assurance

To ensure the quality of the information gathered during the data collection and analysis, surveyors used key measures for quality assurance of data, including—

- PFSA and the USAID | DELIVER PROJECT prepared, reviewed, and pre-tested the survey instrument before it was finalized.
- Data collectors and supervisors had intensive training to ensure they completely understood the questions and methodology prior to field data collection.
- Several quality safeguards were incorporated into the data entry program: automatic skips where appropriate, range checks, coding checks, and others.
- After data were transferred into the SPSS database, all questionnaires were reviewed again to ensure that the data entry were accurate. Preliminary analysis and frequencies were conducted before the full data analysis to ensure consistency within the database.
- After the data collection and preliminary results were obtained, a validation workshop was organized to share initial findings from the survey and to gather input from stakeholders on those findings.

Ethical Considerations

Prior to launching the survey, RHBs and the management from the respective facilities, were informed about the study. During data collection, each respondent was told the purpose, scope, and expected outcome. Any respondent not interested in participating in the survey could decline; during the interview, if the respondent did not want to answer specific questions or discontinue the interview, they could. All data are anonymous; no individual or facility will be identified in any reports or any publication based on this study.

Limitations

- The focus of this study was the implementation of IPLS and the availability of medicine at health facilities; it did not look at system implementation or availability at the PFSA.
- The emphasis was on essential medicines for public health—it did not look at the availability of specialty items or items for tertiary care at hospitals: the authors suggest that these require their own specialized survey.

- Because a representative survey of supply chain status prior to IPLS implementation was not done, it is difficult to compare current and previous performance. The study attempts to compile data from various sources to provide as much comparative analysis as possible.
- Although IPLS consider health posts one of the dispensing units of the resupplying health centers, the survey included a limited number of health posts to assess their unique characters. The sample size included in the survey was purposely determined and relatively small compared to the total size of heath posts in the country; therefore, it may not be representative enough to use for generalizations.

Survey Findings and Discussion

Logistics Management Practices

With the introduction of IPLS, various recording and reporting formats were designed for use at different levels of the healthcare supply chain. Availability and usage of standard forms and tools are critical supply chain indicators. At the facility level, bin cards, stock cards, Internal Facility Report and Resupply Form (IFRR), Health Post Monthly Report and Resupply Form (HPMRR,) and Report and Requisition Form (RRF) were introduced to record commodity transactions and report quantities for resupply. PFSA, with partners, have printed and distributed these forms to health facilities.

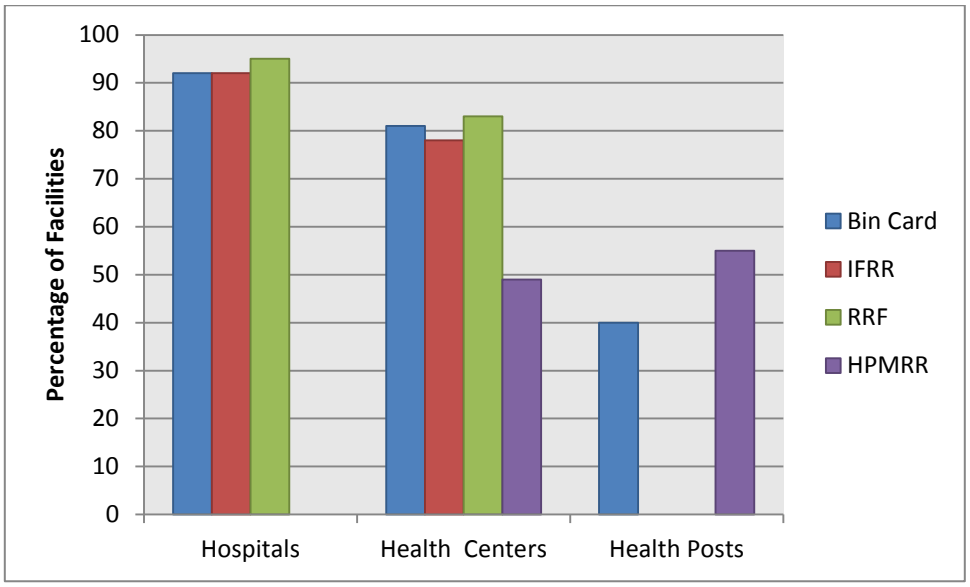
Logistic Records

Logistics records are the primary framework for every logistics system. The records are intended to capture critical logistics data at each level of the health system. The data captured on logistics records are then combined to form logistics reports, which are used for crucial decision-making about resupply quantities, forecasting, and procurement decisions.

Availability and utilization of logistics records

Availability of blank bin cards, IFRRs, and RRFs are high at hospitals (above 90 percent) and health centers (close to 80 percent). However, the availability of the recording and reporting formats decline when moving down the supply chain. The availability of bin cards—the fundamental logistics records that captures essential inventory data—was 40 percent at the health post–level. Similarly, the HPMRR—health posts monthly reporting and resupply form—was available in 55 percent of health posts and 49 percent of health centers (see figure 1). (Note that health centers are responsible for distributing the HPMRR to health posts.) Clearly, more must be done to improve the availability of all forms.

Figure 1. Percentage of Facilities with Blank Logistic Recording and Reporting Formats to Manage Products by Facility Types, January 2014



Availability and Utilization of Bin Cards

Consistent and accurate use of bin cards is essential for inventory management. Thus, availability and utilization of the bin cards was further assessed for selected essential pharmaceuticals. Across all facility levels, availability of bin cards for the selected products was reasonable. However, a discrepancy was observed by level of facility and product types—ranging from approximately 97 percent for amoxicillin at the hospitals to 15 percent for ferrous sulphate/folic acid at the health-post level. Again, for the products assessed, the average availability of bin cards is lower at the health post–level (24 percent) compared to hospitals (73 percent) and health centers (64 percent).

To consider bin cards up-to-date, they had to be updated within the previous 30 days. In addition, if the bin card was last updated with the balance of 0 and the facility has not received any of that product since the date of that entry, it is also considered updated. The percentage with updated bin card is calculated only for facilities that use bin cards for the products assessed. Although a higher percentage of hospitals and health centers utilized bin cards for the assessed products, the percentage of updated bin cards was found to be similar across all health facility levels. Almost two-thirds of the bin cards that had been used were updated (see table 2). The availability and use of bin cards varies slightly between facilities at phases of IPLS implementation; phases I and II facilities showing relatively better performance than the IPLS newly implemented facilities (see table 7 in appendix A).

Table 2. Percentage of Facilities Where Bin Cards Are Available and Updated by Product and Facility Types, January 2014

Product	Hospitals		Health Centers		Health Posts	
	Available	Updated	Available	Updated	Available	Updated
Amoxicillin	97	81	82	68	NA	NA
Ceftriaxone	94	83	61	57	NA	NA
Ciprofloxacin	97	57	75	68	NA	NA
Co-trimoxazole	80	75	70	76	16	33

Product	Hospitals		Health Centers		Health Posts	
	Available	Updated	Available	Updated	Available	Updated
Dextrose	50	53	43	54	NA	NA
Gentamycin	69	71	67	50	NA	NA
Mebendazole	74	54	68	58	22	57
Oral rehydration salt (ORS)	61	77	57	53	24	50
Oxytocin	43	53	25	63	NA	NA
Paracetamol	86	75	81	70	NA	NA
RHZE	81	59	69	57	NA	NA
DMPA	69	64	66	65	35	79
Implant	57	48	57	57	33	56
Lamivudine + zidovudine + nevirapine	79	65	83	69	NA	NA
Nevirapine	69	41	66	60	NA	NA
Efavirenz	75	67	82	69	NA	NA
Ferrous sulphate/folic acid	60	48	52	58	15	100

Facilities with Accurate Balances on Bin Cards

The survey, in addition to checking the use and updating of bin cards, was also used to assess the quality of data by cross-checking the accuracy of the bin card balance with the physical count for each of the selected products on the day of the visit. The comparison was done at two levels of accuracy. A bin card with no discrepancy between the bin card and the physical count is considered accurate; but, having less than a 10 percent discrepancy between the bin card and the physical count is considered near to accurate (to account for discrepancy while converting values below the minimum unit of issue to the default unit). The percentages are calculated only for facilities that had bin cards and managed the specific products.

Some differences were observed in the levels of accuracy among commodities by facility level. At hospitals, accurate balances ranged from 29 percent (amoxicillin) to 71 percent (dextrose); with an average of 49 percent. At health centers, the lowest accuracy balance was 43 percent for DMPA and ciprofloxacin and the highest (70 percent) for ceftriaxone (see table 3). The level of accuracy for health posts averaged 39 percent for the five products assessed, with the highest for DMPA. However, the data show a significant increase for near (within 10 percent) accuracy. On average, nearly 77 percent of hospitals and health centers had bin cards within 10 percent accuracy (see table 3). For health posts, the average was about 51 percent.

Table 3. Percentage of Health Facilities with Accurate or Near-Accurate Balance Entries by Product and Facility Types, January 2014

Product	Hospital		Health Center		Health Post	
	Accurate Balance	Near Accurate[1] (+/-10%)	Accurate Balance	Near Accurate (+/-10%)	Accurate Balance	Near Accurate (+/-10%)
Amoxicillin	29	74	54	83	NA[2]	NA
Ceftriaxone	50	73	70	86	NA	NA
Ciprofloxacin	43	77	43	73	NA	NA
Co-trimoxazole	46	79	48	73	67	67
Dextrose	71	82	57	72	NA	NA
Gentamycin	58	88	58	80	NA	NA
Mebendazole	58	85	53	78	43	
Oral rehydration salt (ORS)	41	82	50	81	20	60
Oxytocin	60	73	54	80	NA	NA
Paracetamol 500mg tablet	44	72	46	77	NA	NA
RHZE	55	86	46	76	NA	NA
DMPA	40	60	43	69	21	71
Implant	52	67	51	71	44	56
Lamivudine + zidovudine + nevirapine	35	70	51	80	NA	NA
Nevirapine	59	86	63	81	NA	NA
Efavirenz	43	71	48	69	NA	NA
Ferrous sulphate/folic acid	55	64	57	85	NA	NA
Average	73	63	64	62	24	63

Forms at Health Posts

Only 40 percent of health posts had blank bin cards on the day of visit. Of those that had bin cards, only 35 percent were using them for DMPA. Of those using them for DMPA, 79 percent had an updated bin card; only 21 percent had an accurate balance and 71 percent a near-to-accurate balance.

Logistics Reports

Logistic reports move data up and down through the supply chain and help in decisionmaking. To facilitate correct and consistent reporting and resupply within the facility and among the different levels in the health supply chain, IPLS introduced the IFRR, HPMRR, and RRF (see table 4). Hospitals and health centers use the RRF to report their consumption and to request the resupply quantity every two

[1]Note that near accuracy includes exact accuracy and those within less than a 10 percent discrepancy.

[2] NA: Products are not assessed at the health post–level.

months from PFSA; while health posts use the HPMRR every month to report their consumption to the resupply health center; the health center can then calculate their resupply quantity (see table 4). The IFRR is an internal facility report and request form between the facility dispensing units and the main facility store.

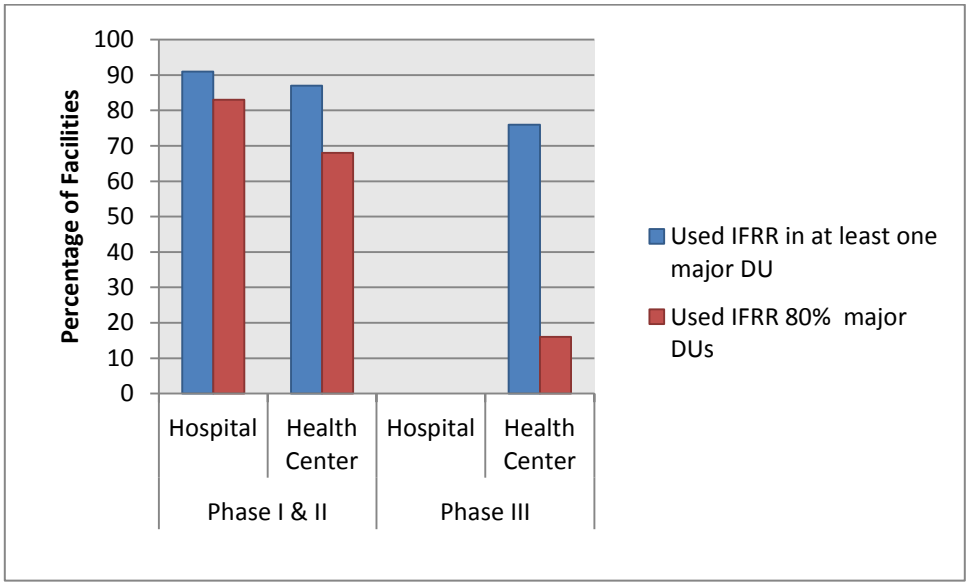
Table 4. Type of Logistics Reports

Name	Acronym	Purpose	From/To	Frequency
Reporting and Requisition Form	RRF	Report and request	Health centers/hospitals to PFSA hub	Bimonthly
Health Post Monthly Report and Resupply	HPMRR	Report and request	Health post to health center	Monthly
Internal Facility Report and Resupply	IFRR	Internal facility report and request	Dispensaries to stores	Varies; usually weekly or biweekly

Internal Facility Report and Resupply Form (IFRR)

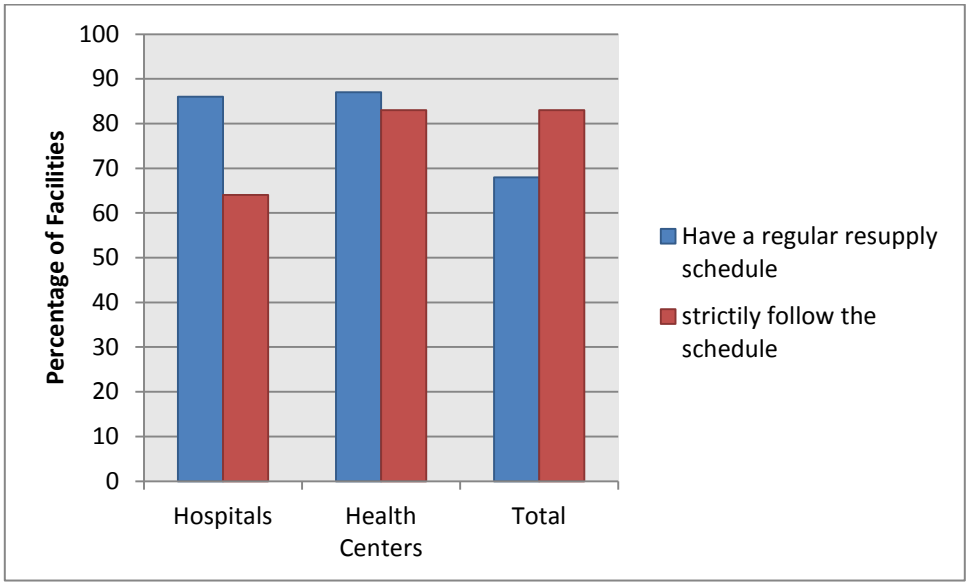
Using the IFRR and routine, scheduled resupply of DUs by stores is a cornerstone of IPLS. Because RRFs are based on stores issues and stock on hand, it is vital that facilities ensure DUs have stock levels of only, at most, one month or two; a week or two is better. Also, DUs should be replenished on a schedule to avoid overworking the pharmacy staff. Figure 2 illustrates the percentage of facilities using IFRR in their DUs. In phases I and II health facilities, IFRRs used in at least one DU was close to 91 percent in hospitals and 87 percent in health centers (see figure 2). The percentage is lower for phase III health centers (77 percent).When the data were further analyzed to measure the use of IFRR in at least 80 percent (four out of five) of the major DUs—outpatient department (OPD), antiretroviral (ARVs), maternal and child health (MCH), laboratory, and tuberculosis (TB)—the percentage shows a decline among phases I and II facilities (83 percent in hospitals and 68 percent in health centers), while in phase III health centers, the decline was significant (16 percent).

Figure 2. Percentage of Facilities Utilizing IFRR in Their Dispensing Units by Facility Types, January 2014



To reduce the workload on store managers and standardize the resupply for DUs, IPLS recommends that facility stores establish a resupply schedule for the dispensing units. Main stores, based on the consumption of DUs, use the agreed-to schedule to issue pharmaceuticals one or more times a month. The survey shows that, among facilities that reported using IFRR at least in one DU, a little more than two-thirds (86 percent of hospitals and 64 percent of health centers) have a resupply schedule posted and 83 percent strictly follow the schedule (see figure 3).

Figure 3. Percentage of Facilities with Resupply Schedule by Facility Types, January 2014



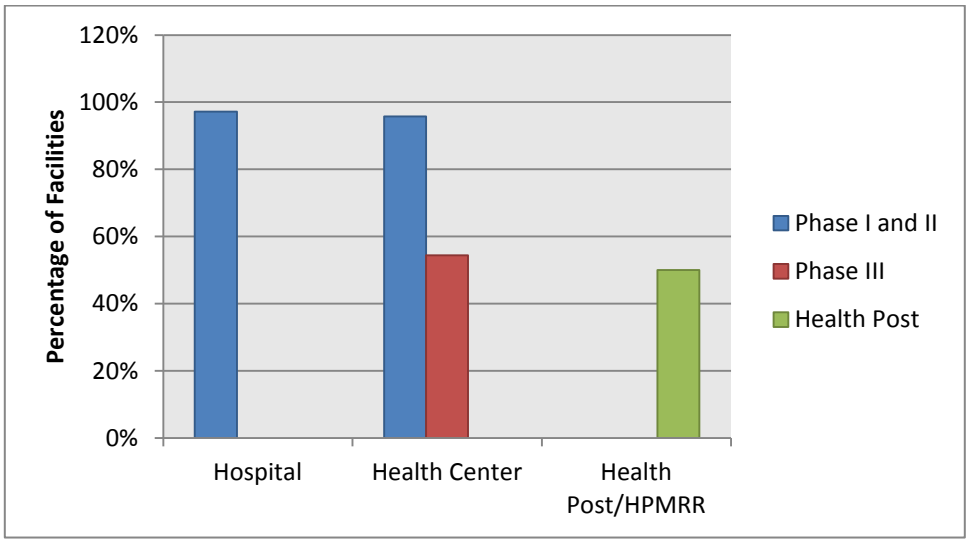
RRF and HPMRR

Reliable recordkeeping is critical for the IPLS to function well, and the information must then be reported to higher levels for effective logistics decisionmaking. One of the primary goals of the IPLS is to enable facilities to produce the bimonthly commodity requests (orders) and resupply form—RRF—to PFSA. PFSA uses the information from the RRF to deliver pharmaceuticals to health facilities, forecast future demands, and make other evidence-based decisions.

The survey result shows a variation in use of RRF by phase of IPLS implementation (phase I, II, and III). The RRF use was high (97 percent) among phases I and II facilities, both in hospitals and health centers. This was not the case for phase III health centers, where only 54 percent used the RRF (see figure 4).

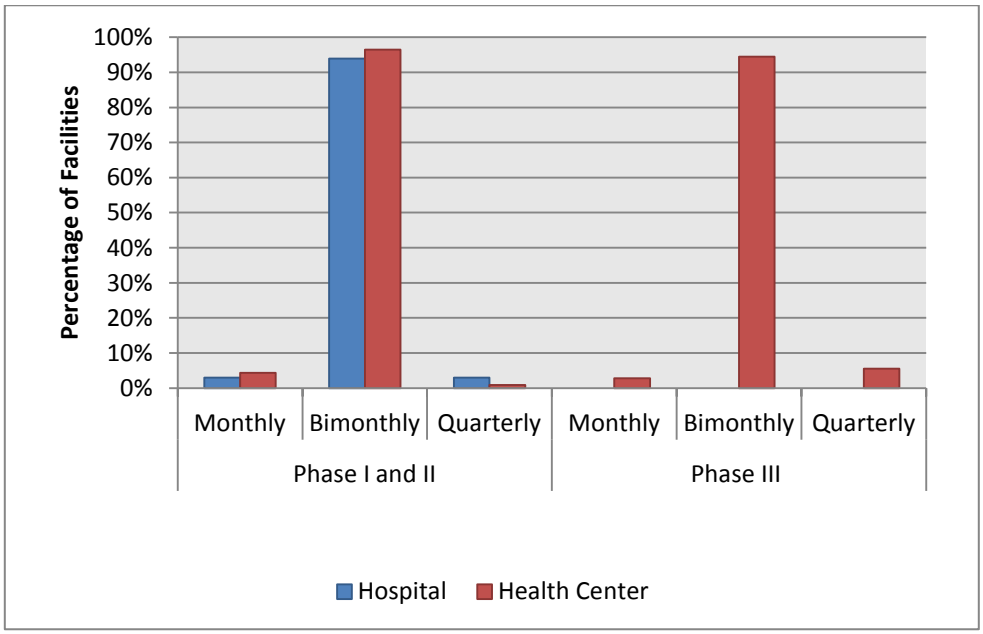
Only half the health posts surveyed used the HPMRR to request commodities from the resupplying health center; this could also be attributed to the low level of format availability and the limited support they received.

Figure 4. Percentage of Facilities Utilizing RRF/HPMRR for Resupply by Facility Types



Every two months, facilities are expected to use the RRF to place their orders to PFSA. As shown in figure 5, among the facilities using RRF—irrespective of the IPLS implementation phase and facility type—more than 90 percent of facilities prepared and submitted their reports every two months.

Figure 5. Facilities Using RRF by Facility Types, January 2014



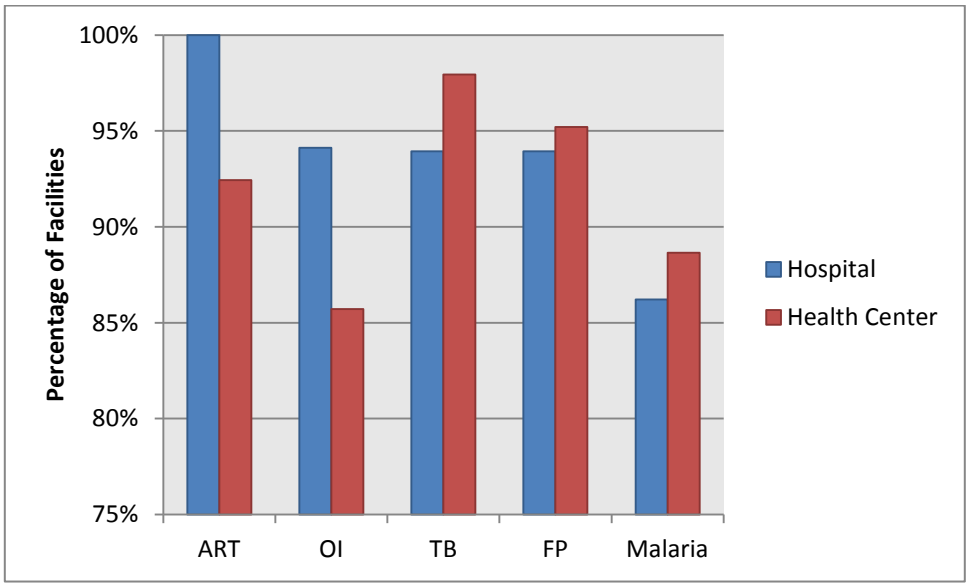
Facilities with Complete and Accurate RRF Reports

The survey, in addition to assessing the rate of reporting, also checked the quality of RRF data by assessing its completeness and accuracy. Data from five major programs were used to check the completeness of the most recent report—HIV, opportunistic infection (OI), TB, malaria, and family planning—included in the RRF. A report is considered complete if all the columns for each products listed in the report are filled in for at least one product listed under each program—unless the facility

does not manage the product. Completeness does not refer to the number of items in an RRF where there is an entry.

Overall, regardless of the type of facilities, the response rate was impressive: reports were completed for all programs in at least 85 percent of the facilities. However, variations were observed by type of facility and program. The level of completeness was high for ART and OI at the hospital level; but, in the health centers, TB and family planning programs were better completed than other programs. The use of RRF for malaria products was low at both at hospitals and health centers, possibly because of the recent shift in the supply of the malaria products from PFSA to RHBs[3].

Figure 6. Complete RRF Reports for Facilities Using RRF by Type of Facility, January 2014

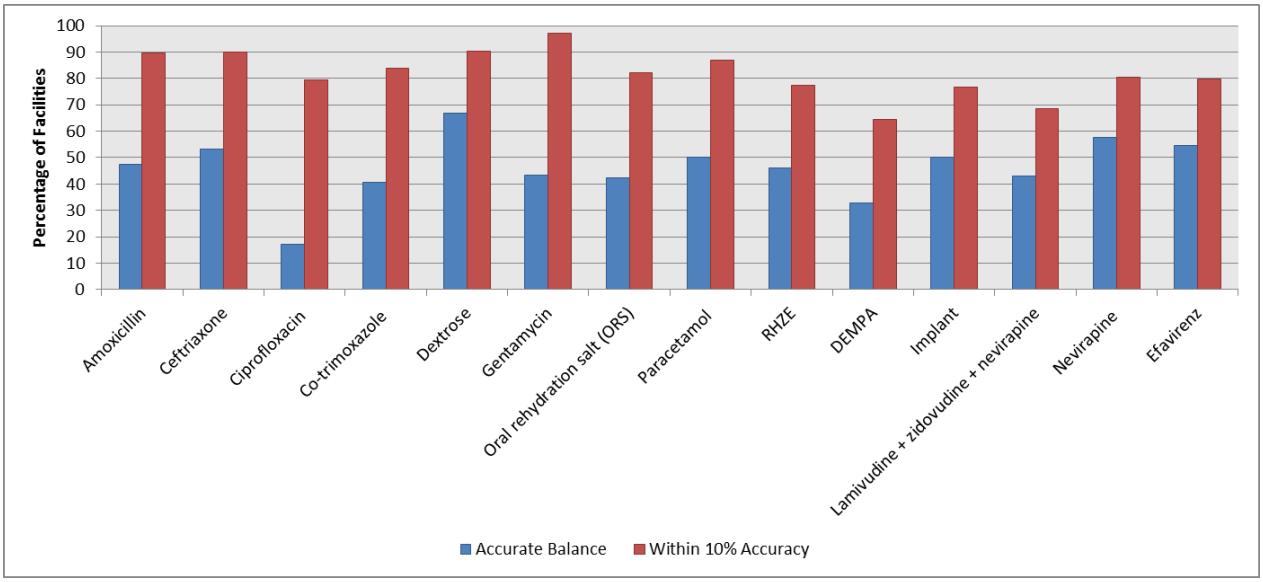


The data quality of RRF reports was also checked by comparing the balance of stock on hand reported in the RRF with the balance on the bin card on the date that the RRF report was completed. For some products, all the information needed to calculate this indicator were not available or not recorded properly—updated bin card and/or completed RRF. Thus, because of the smaller number of facilities, a valid comparison could not be made between the different facility levels.

Figure 7 illustrates the percentage of facilities with accurate or near accurate balance RRF data, by product. The exact accuracy of RRF data was between 40 and 50 percent for most of the products; with the average of 46 percent. A relatively better percentage of exact accuracy was recorded for dextrose (67 percent). However, the result is almost double (82 percent) when the calculation is adjusted to near accurate—within 10 percent accuracy (to account for logical rounding to minimum unit of issue pack size at PFSA). Ceftriaxone, dextrose, and gentamycin had near accurate RRF—above 90 percent (see figure 7).

[3] At the time of the survey, malaria commodities are, for the most part, distributed by PFSA to RHBs and from there down to zones, woredas, and facilities. Facilities, therefore, are less likely to use the RRF to order them.

Figure 7. Percentage of Health Facilities, if Data Were Available, with Accurate or Near-Accurate Balance RRF Data by Product, January 2014

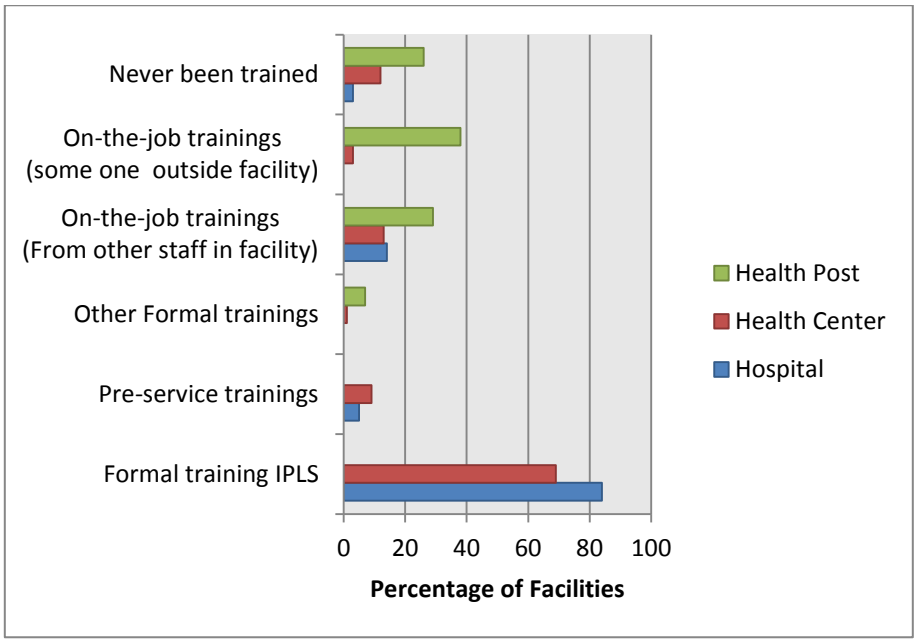


Training on Logistics Management

When implementing IPLS, building the capacity of health facility staff has been a major focus of PFSA and its partners. A three-day formal IPLS curriculum was designed and implemented for pharmacy personnel working in hospitals and health centers. For health posts, because of the large number of health extension workers (HEWs), direct training was considered time- and resource-consuming; therefore, health center staff were trained to provide on-the-job training (OJT) to HEWs.

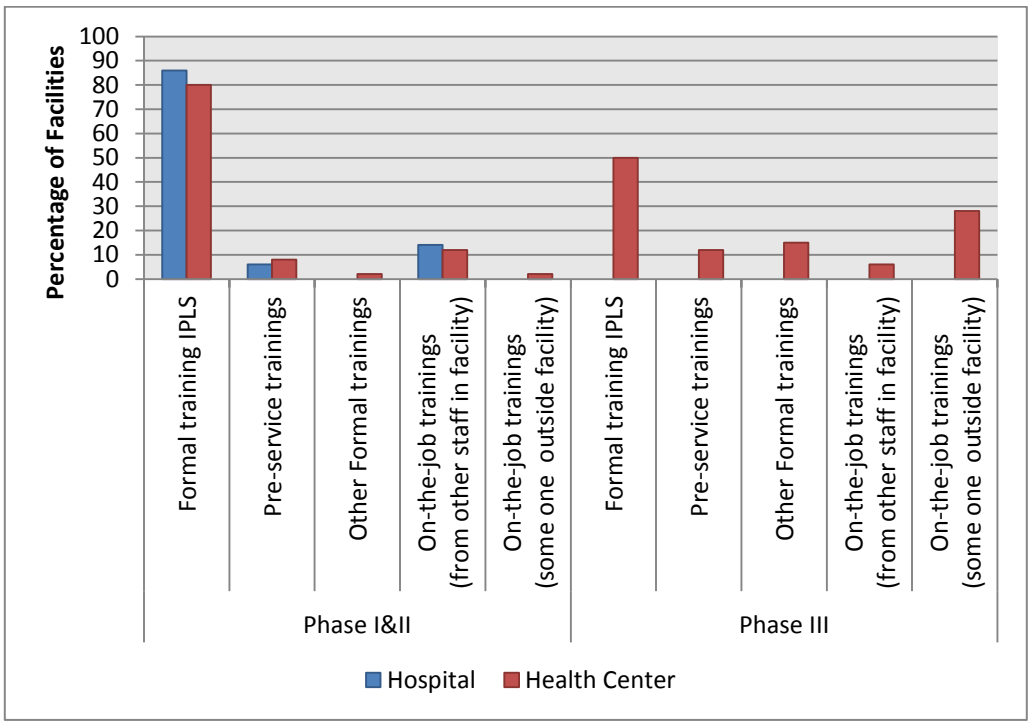
Approximately 87 percent of pharmacy personnel and HEWs managing products had received training on how to calculate the order quantities; the lowest percentage was for health posts (74 percent). For all facilities assessed, more than 84 percent of hospitals and 69 percent of health center pharmacy personnel received their training through the national IPLS training program; while a little more than two-thirds of HEWs working at the health posts reported received OJT. Only 7 percent of HEWs reported receiving formal training on logistics and 26 percent did not receive any training (see figure 8).

Figure 8. How Commodity Managers Learned to Complete Forms and Reports by Facility Type, January 2014



Further data disaggregation by phase of IPLS implementation (see figure 9) revealed that while all phases I and II health facility pharmacy staff indicated received training, 29 percent of phase III facilities reported they had not received any kind of training on how to complete the different logistic formats.

Figure 9. How Commodity Managers Learned to Complete Forms and Reports by IPLS Implementation Phase, January 2014



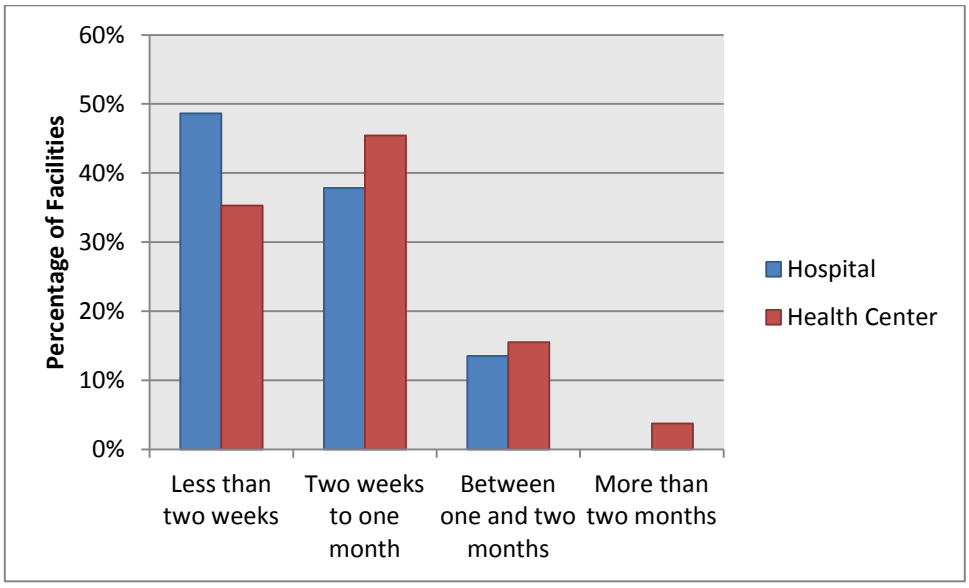
Order Fill Rate

Perceived Timeliness and Order Fill Rate

IPLS SOPs recommend that, for program commodities, PFSA resupplies facilities with the requested quantities within one month of receiving the request. For products procured through the revolving drug fund (RDF), if the product is not available at the PFSA store, facilities can buy products from PFSA or other vendors anytime without a specific resupply schedule.

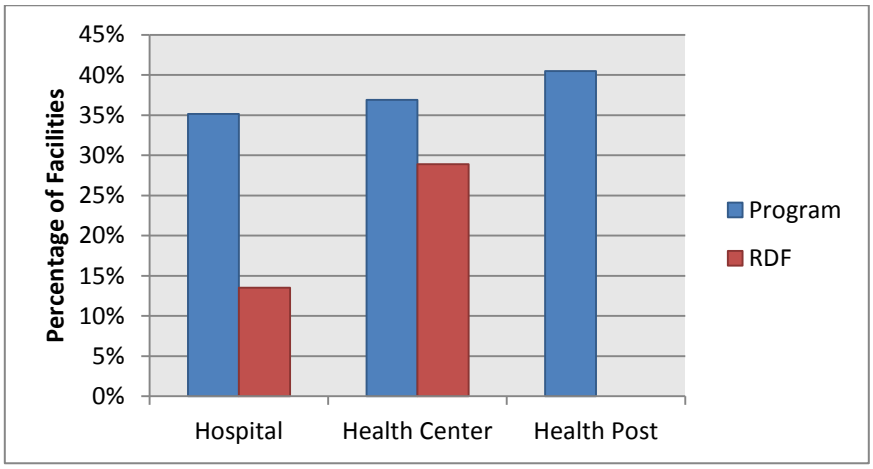
The survey tried to assess the perceptions of facility staff on the timeliness and the resupply of products, as per their request. Regardless of the type of product, more than 80 percent of both hospitals and health centers say they usually receive products requested within one month or less. Only 4 percent of the facilities reported waiting for more than two months to receive products after placing orders (see figure 10).

Figure 10. Percentage of Facilities with Perceived Time of Resupply by Facility Type, January 2014



However, the perceived order fill rate—the percentage of items that are actually filled according to ordered quantities with the correct products—for both program and RDF products, was found to be low. For program commodities, on average, a little more than one-third of facilities (37 percent) reported usually receiving the quantity they ordered. The rate for RDF products is even lower; with less than 14 percent of hospitals and 29 percent of health centers reporting receiving the quantity requested. Of course, this indicator is subjective; the authors do not know if the ordered quantities are what was actually needed (see figure 11).

Figure 11. Percentage of Facilities with Perceived Order Fill Rate by Facility Type, January 2014

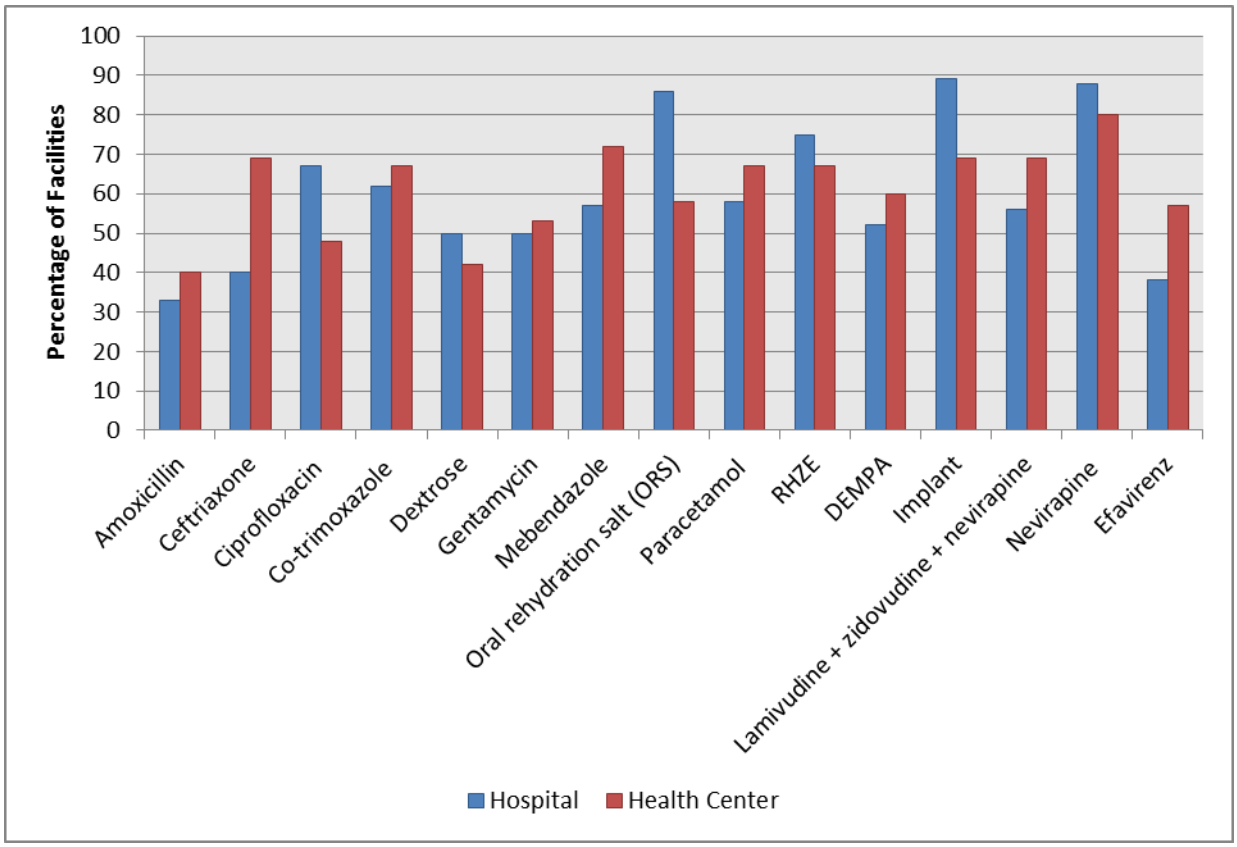


Order Fill Rate for Selected Products

The survey, in addition to assessing the perception of facility staff about resupply, further analyzed whether or not facilities are getting the quantities they ordered. To calculate this, the most recent quantity ordered was compared with the same period quantity received for selected essential pharmaceuticals. Facilities that received the quantity ordered within the range of 10 percent (to account for rounding) are considered to have received their order. Note that this indicator is calculated only for facilities with information on both quantities ordered and received for the products assessed.

For most products assessed, the percentage of facilities resupplied with the quantity ordered was about 60 percent, both at the hospital- and health center–level. At the health center, ORS, RHZE (which is a combination of four drugs), hormonal implants, and nevirapine were resupplied in more than 70 percent of facilities (see figure 12). At hospitals, eight products out the 15 analyzed were resupplied in about 70 percent of the facilities. At both the hospitals and health centers, the resupply with the requested quantities was near or below 50 percent for amoxicillin (33 percent at hospitals and 40 percent at health centers) and dextrose (50 percent at hospitals and 42 percent at health centers).

Figure 12. Percentage of Facilities Resupplied Based on Their Request by Product and Facility Type, January 2014

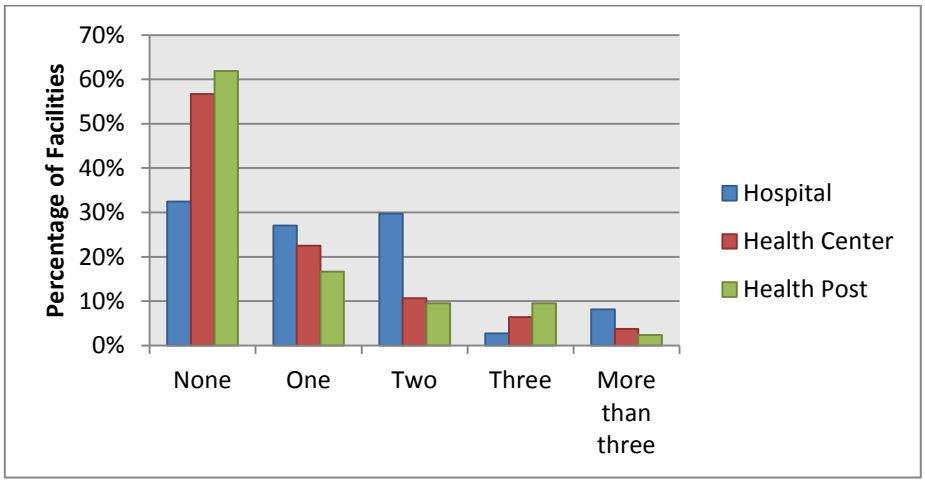


Note that there are many reasons why a facility may not be supplied with the quantity ordered. A shortage is one, but it is also possible that facilities order more or less than the required or correct quantity; the survey did not assess this. In addition, some anecdotal information indicates that PFSA may sometimes push products, particularly program commodities, to health facilities.

Emergency Order

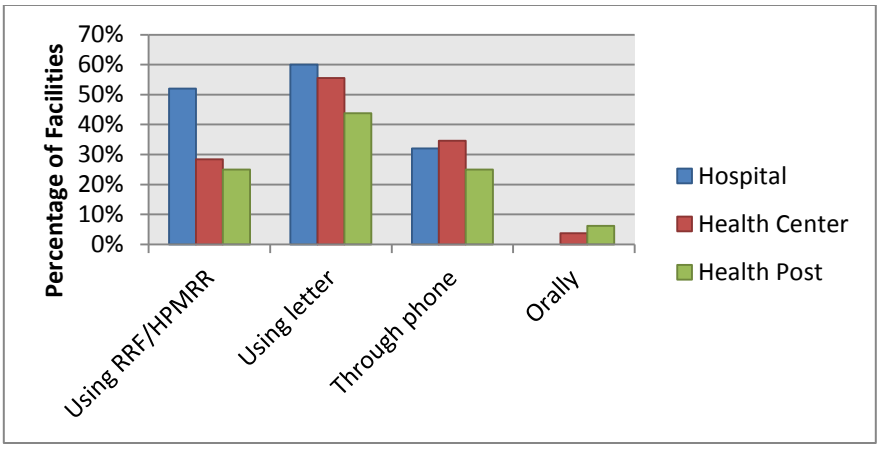
With IPLS, the minimum-maximum inventory control system is intended to ensure that facilities always have enough stock to serve their clients and to avoid placing emergency orders. As indicated above, under normal condition, hospitals and health centers are expected to send their RRF report bimonthly to PFSA and other higher levels. If the stock on hand is below the established emergency order points—two weeks for hospitals and health centers, and one week for health posts—IPLS recommends placing emergency orders to avoid stockouts (see figure 13).

Figure 13. Frequency of Emergency Orders by Facility Type, January 2014



Interviews with facility personnel indicated that about half the facilities placed at least one emergency order in the three months preceding the survey; with a higher percentage of hospitals (68 percent) than health centers (43 percent) and health posts (38 percent).Of those facilities placing emergency orders in the three months prior to the survey; on average, about half used letters, while more hospitals (52.8 percent) than health centers (28 percent) and health posts (25 percent) used the standard RRF/HPMRR format. About one-third also placed the order over telephone (see figure 14).

Figure 14. Type of Format Used to Place Emergency Orders by Level of Facility, January 2014



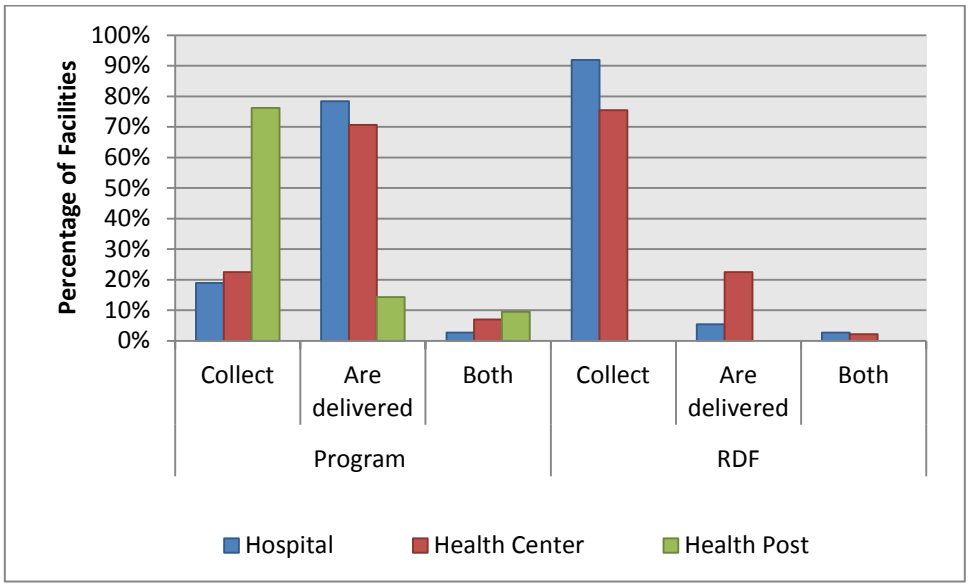
Transportation and Distribution

In the Ethiopian supply chain, commodities are delivered to facilities using a combination of mechanisms. Since March 2012, PFSA has directly delivered program commodities to many health facilities—all hospitals and accessible health centers. As an interim approach, the remaining health centers are receiving their products through woredas or zonal health offices (PFSA delivers to them). For RDF products, health facilities are expected to use their own vehicle, or other transportation, to collect their purchased products from higher levels or vendors. Health posts are expected to collect their products from their resupply health center every month.

The findings from the survey reflect these norms. In most health facilities—78 percent of the hospitals and 71 percent of health centers—program commodities are usually delivered to their stores via delivery from a higher level; while most health posts (76 percent) collect their products from the supplying health center (see figure 15). A similar trend was also observed between different phases of IPLS implementation: more phases I and II facilities (81 percent) than phase III facilities (51 percent) receive program commodities through delivery from higher levels(phases I and II facilities tend to be larger and more accessible and are more likely to be serviced directly by PFSA).

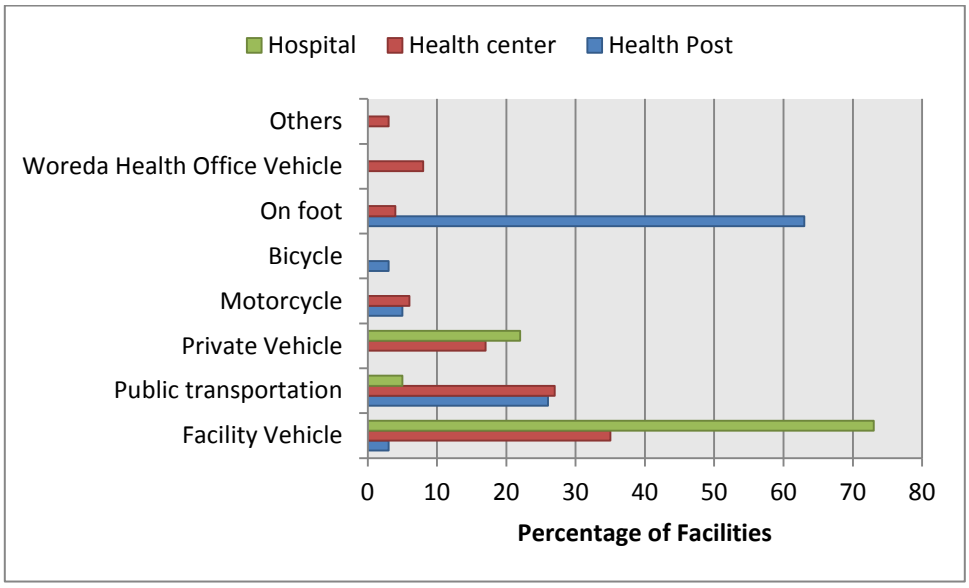
As expected, in the case of RDF commodities, facilities themselves (92 percent of hospitals and 75 percent of health centers) collect from the suppliers, primarily from PFSA.

Figure 15. Responsible for Transporting Commodities by Facility Type, January 2014



The survey also assessed the type of transportation facilities used to collect their products. For hospitals (73 percent) and health centers (35 percent), facility vehicles are reported to be the primary means of transport. A significant percentage of health centers also reported using public transport (27 percent) or private vehicles (17 percent) to collect products. Two-thirds of health post staff travel on foot to collect their products from health centers or woredas (see figure 16).

Figure 16. Types of Transportation Used to Collect Products by Facility Type, January 2014

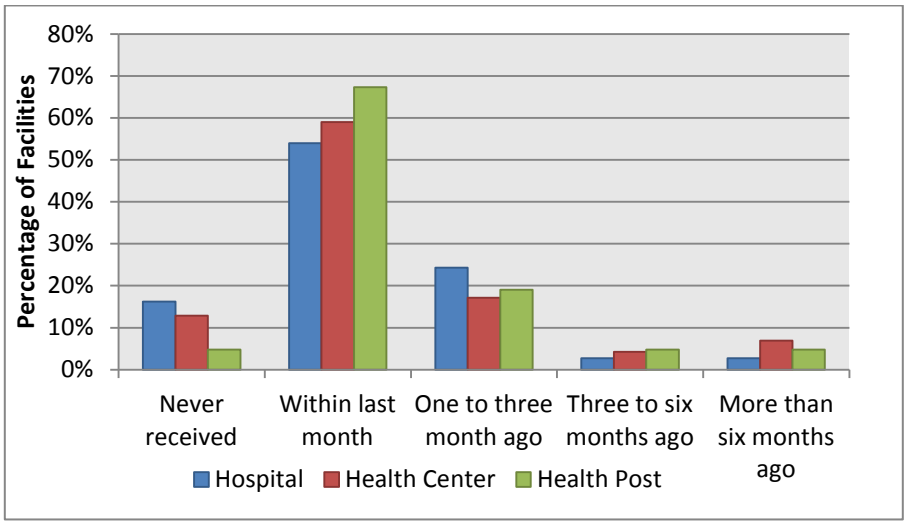


Supervision

Supervision is an important part of quality assurance for the performance of any logistics system. Supervision helps improve individual and system performance; it can also alert managers to potential problems at the facility level: stockouts, understocks and overstocks, poor storage conditions, and products near their expiry dates.

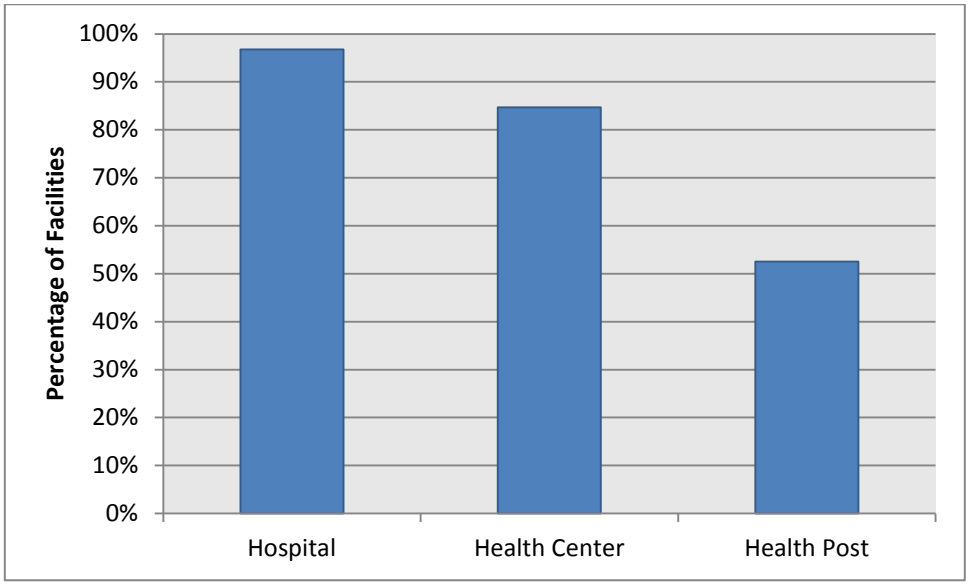
Most facilities receive support from higher levels using supportive supervision. More than three-fourths of the facilities surveyed (78 percent), with a higher percentage of health posts (86 percent), reported receiving supervision within the last three months. About 60 percent of facilities received a supervision visit in the previous month (see figure 17). However, 10 percent of health facilities received their last supervisory visit more than three months ago; 12 percent of facilities with a relatively higher percentage of hospitals (16 percent) never had a visit.

Figure 17. Percentage of Facilities Receiving Supervision Visit by Facility Type, January 2014



The focus of the visit and issues addressed are also an important element and a useful indicator in assessing system management. Of the facilities that received a visit, nearly all the hospitals (97 percent) and most of the health centers (85 percent) indicated that the supervision included store management or logistics issues. At the health post–level, among those receiving supervision, only about half (53 percent) reported the supervision included logistics-related issues (see figure 18). This result demonstrated the importance of including logistics issues in the integrated supervisions conducted at health posts.

Figure 18. Percentage of Facilities Receiving Store Management/Logistics-Related Supervision Visit by Facility Type, January 2014

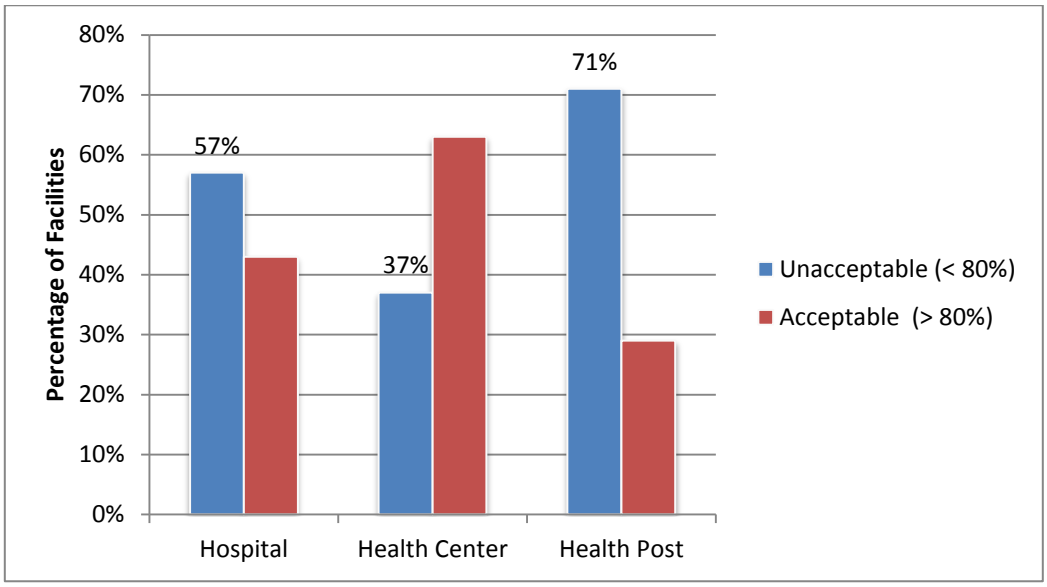


Storage

To provide clients with high-quality products, each facility must have safe, protected, and well-organized storage areas that will prevent damage. To assess the storage conditions of health facilities, 11 standard criteria (see appendix C) were used. Observations and interviews with facility staff were used to evaluate the adherence of health facility stores to these criteria. Stores that met at least nine of the 11 criteria (80 percent of the criteria) were considered acceptable; those meeting less than nine were rated unacceptable.

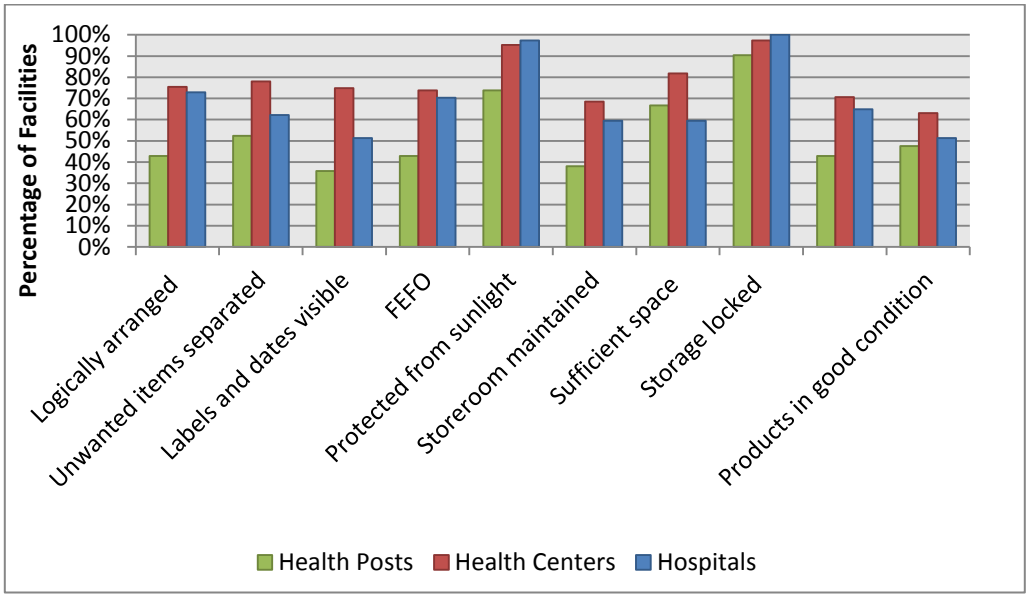
Figure 19 illustrates the percentage of facilities meeting acceptable storage conditions by facility type. On average, slightly more than half (55 percent) the facilities met acceptable storage conditions (80 percent of the criteria or more). Health center stores (63 percent) did better than hospitals (43 percent). Only 29 percent of health posts had acceptable storage conditions.

Figure 19. Percentage of Facilities Meeting Acceptable Storage Conditions by Facility Type, January 2014



The two conditions met most often by facilities of all levels were protection from sunlight and keeping the storage area locked; while the least satisfied were *products are stored in good conditions*—clean, no trash, sturdy shelves, and boxes well-organized—and *storage area is visually free from harmful insects and rodents*. In almost all cases, health posts scored the poorest for storage conditions, followed by hospitals (see figure 20).

Figure 20. Percentage of Facilities Meeting Specific Acceptable Storage Conditions by Facility Type, January 2014



Stock Availability

The most important output of a logistics system is stock availability, which will improve health outcomes. Stockouts in any health system represent a critical system failure. They can result in patients going without life-saving pharmaceuticals and reduced confidence in the health system. Even where stockouts are not high, facilities with too little stock at the time of the visit are either likely to stockout or will require an emergency order before they receive their next routine order; while overstocks can mean waste and inefficiency.

To assess stock availability at health facilities, the survey collected data on stock on hand on the day of the visit and measured both the frequency and duration of stockouts during the six months prior to the survey. The survey collected data on 27 essential pharmaceuticals. All analysis by product type was done only for facilities that reported managing the product.

Stockouts on Day of Visit

Overall, the majority of the health facilities had most of the essential pharmaceuticals in stock on the day of the visit: average availability was 89 percent for the basket of commodities, for all facilities. Of the 27 items assessed, availability was at 90 percent or greater for 18 items and 81 percent or greater for all but three items. There was very little variance between types of facilities across all essential pharmaceuticals assessed. At health posts, availability was generally lower (see table 5).

Table 5. Availability of Essential Pharmaceuticals on Day of Visit by Facility Type, January 2014

	Products	Hospitals	Health Centers	Health Posts	Total
1	Amoxicillin 500mg/250mg capsule	97	95	NA	95
2	Artemether + lumfanthrine (20mg + 120mg tablet—any packing)	86	89	86	88
3	Ceftriaxone(1gm/500mg injection)	81	87	NA	86
4	Ciprofloxacin 500mg tablet	89	91	NA	90
5	Co-trimoxazole 240mg/5ml suspension, 100ml	100	97	42	93
6	Dextrose in normal saline with giving set	71	65	NA	66
7	Gentamycin80mg/2ml ampoule, injection	80	84	NA	84
8	Mebendazole100mg/albendazole 400mg tablet	94	92	75	90
9	Oral rehydration salt (ORS)	97	97	86	95
10	Oxytocin10 units/ml in 0.5ml and 1ml ampoule injection	97	93	NA	94
11	Paracetamol 500mg tablet	95	98	NA	98
12	RHZE 150mg/75mg + 400mg + 275mg tablet	100	97	NA	97
13	DMPA	92	98	98	97
14	Implant 68mg implant (Implanon) or levonorgestrel 75mg implant (Jadelle)	89	93	89	92
15	Lamivudine + zidovudine + nevirapine (150mg + 300mg + 200mg) tablet	97	98	NA	98
16	Nevirapine10mg/ml oral suspension	94	95	NA	95
17	Efavirenz 600mg capsule	96	94	NA	94

	Products	Hospitals	Health Centers	Health Posts	Total
18	Pentavalent vaccine (DTP + HepB + Hib) 2-dose vial of lyophilised Hib vaccine to be reconstituted with liquid DTP-HepB	100	94	53	89
19	PCV10 vaccine 2-dose vial	100	94	NA	95
20	Ferrous sulphate/folic acid	97	86	NA	88
21	Arthemeter injection	86	81	NA	81
22	Giemsa stain 0.76% solution	28	34	NA	33
23	KHB	100	94	NA	95
24	Acid alcohol 1% solution	94	91	NA	92
25	Blood lancet	94	96	NA	95
26	Microscope slide	94	96	NA	96
27	EDTA tube	86	88	NA	88
	Average	**90.1**	**89.5**	**75.6**	**89.0**

Products with above 95 percent availability at both hospitals and health centers were amoxicillin, co-trimoxazole, oral rehydration salt (ORS), paracetamol, RHZE, and lamivudine + zidovudine + nevirapine. DMPA was available in more than 98 percent of health centers and health posts. Overall, dextrose availability was lowest at all levels (71 percent of hospitals and 65 percent of health centers). The study also found relatively lower availability for gentamycin (80 percent of hospitals and 85 percent of health centers). Availability is usually lower at health posts–level, particularly for co-trimoxazole (42 percent) and mebendazole (75 percent).

Stockouts within Last Six Months

Data were also collected on the availability of the selected products throughout the six-months prior to the assessment—how many times facilities had stocked out and for how many days. This information is useful in determining whether facilities chronically or intermittently stockout. It is important to note that data are collected by reviewing the bin cards; it is not based on a physical inventory (see table 6). Therefore, the accuracy of the indicator relies on the facilities recordkeeping.

Table 6. Availability of Essential Pharmaceuticals in Six Months Prior to Survey by Facility Type, January 2014

	Products	Hospitals	Health Centers	Health Posts	Total
1	Amoxicillin 500mg/250mg capsule	84	65		68
2	Artemether + lumfanthrine (20mg + 120mg tablet—any packing)	67	57	71	60
3	Ceftriaxone (1gm/500mg injection)	53	66		63
4	Ciprofloxacin 500mg tablet	63	70		69
5	Co-trimoxazole240mg/5ml suspension, 100ml	75	70	67	70
6	Dextrose in normal saline with giving set	65	68		67
7	Gentamycin 80mg/2ml ampoule, injection	50	64		61
8	Mebendazole100mg albendazole 400mg tablet	96	85	71	87

	Products	Hospitals	Health Centers	Health Posts	Total
9	Oral rehydration salt (ORS)	91	82	80	83
10	Oxytocin 10 units/ml in 0.5ml and 1-ml ampoule injection	93	90		91
11	Paracetamol 500mg tablet	88	78		80
12	RHZE 150mg/75mg + 400mg + 275mg tablet	90	90		90
13	DMPA	76	86	86	84
14	Implant 68mg implant (Implanon) or levonorgestrel 75mg implant (Jadelle)	90	88	78	88
15	Lamivudine + zidovudine + nevirapine (150mg + 300mg + 200mg) tablet	83	75		76
16	Nevirapine10mg/ml oral suspension	86	82		83
17	Efavirenz 600mg capsule	90	87		88
18	Pentavalent vaccine (DTP + HepB + Hib) 2-dose vial of lyophilised Hib vaccine to be reconstituted with liquid DTP-HepB	81	85	60	83
19	PCV 10 vaccine 2-dose vial	83	77		78
20	Ferrous sulphate/folic acid	100	83		86
21	Arthemeter injection	61	62		62
22	Giemsa stain 0.76% solution	89	71		76
23	KHB	80	73		74
24	Acid alcohol 1% solution	92	91		91
25	Blood lancet	85	81		81
26	Microscope slide	100	81		85
27	EDTA tube	100	80		85
	Average	**81.9**	**77.3**	**73.3**	**78.1**

Again, availability of most products is usually high (between 70 and 90 percent), although the percentage of stockouts has increased, as compared to data on the day of the visit. Average availability for the basket of items during six months was 78.1 percent. During the last six months, mebendazole, ORS, and oxytocin were the most available products at the hospitals—with more than 90 percent of availability in the stores. At the health center stores, oxytocin, RHZE, implants, and efavirenz were widely available. Availability at the health post–level in the last six months was slightly lower than for hospitals and health centers: 73.3 percent.

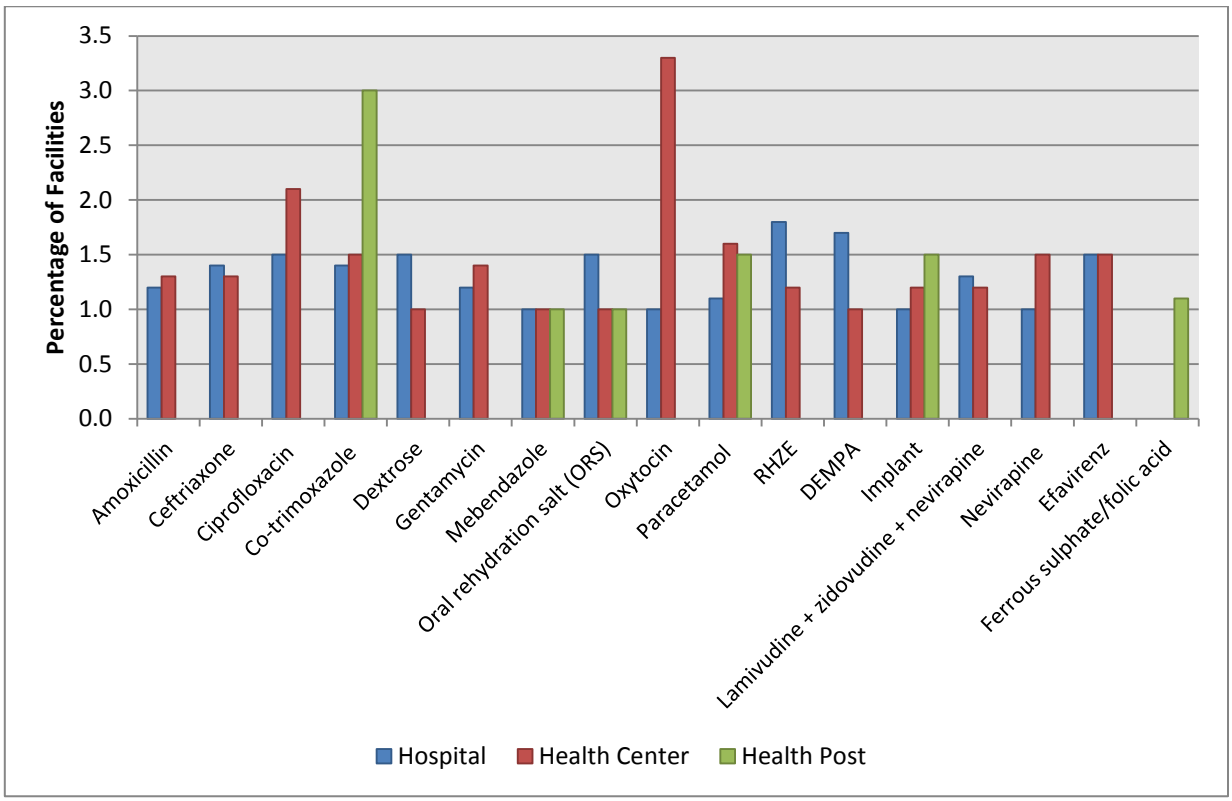
Stockouts for artemether + lumfanthrine, ceftriaxone , ciprofloxacin, dextrose, and gentamycin were relatively high compared to other products, with a stockout at least once in more than 30 percent of facilities in the six months prior to the survey.

Frequency of Stockouts

In facilities that had a stockout of a product at least once in the six months prior to the survey, the survey assessed the number of times a stockout occurred (see figure 21). Across all levels of the facility, the frequency of stockout was similar for most of the products: approximately 1.5 times. Stockouts of oxytocin in health centers and co-trimoxazole in health posts were more frequent: they occurred, on

average, 3.3 and 3.0 times, respectively. Frequency of stockouts was lower for mebendazole, lamivudine + zidovudine + nevirapine, implants, and amoxicillin.

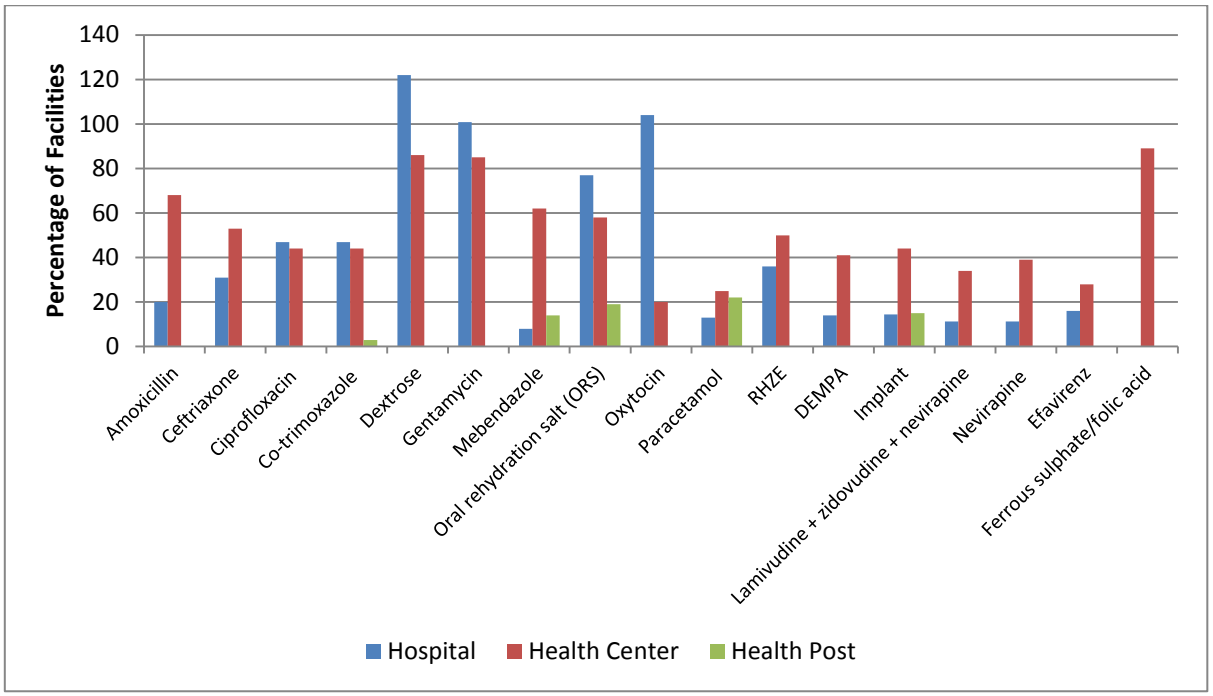
Figure 21. Frequency of Stockouts within the Last Six Months Prior to the Survey by Facility Type, January 2014



Duration of Stockouts

The average duration of stockouts varied widely across facility type and product. The duration for dextrose, gentamycin, ORS, and oxytocin was high at hospital stores; while stockouts of ceftriaxone, dextrose, gentamycin, and ferrous sulphate/folic acid lasted longer at health centers. At health posts, although stockouts were more frequent, the average duration of stockouts was consistently shorter than for health centers or hospitals (see figure 22). This is surprising and suggests that health posts—which, in theory, depend on health centers for resupply—can access supplies through other means, such as kits or direct partner support.

Figure 22. Duration of Stockouts within the Last Six Months Prior to the Survey by Facility Type, January 2014



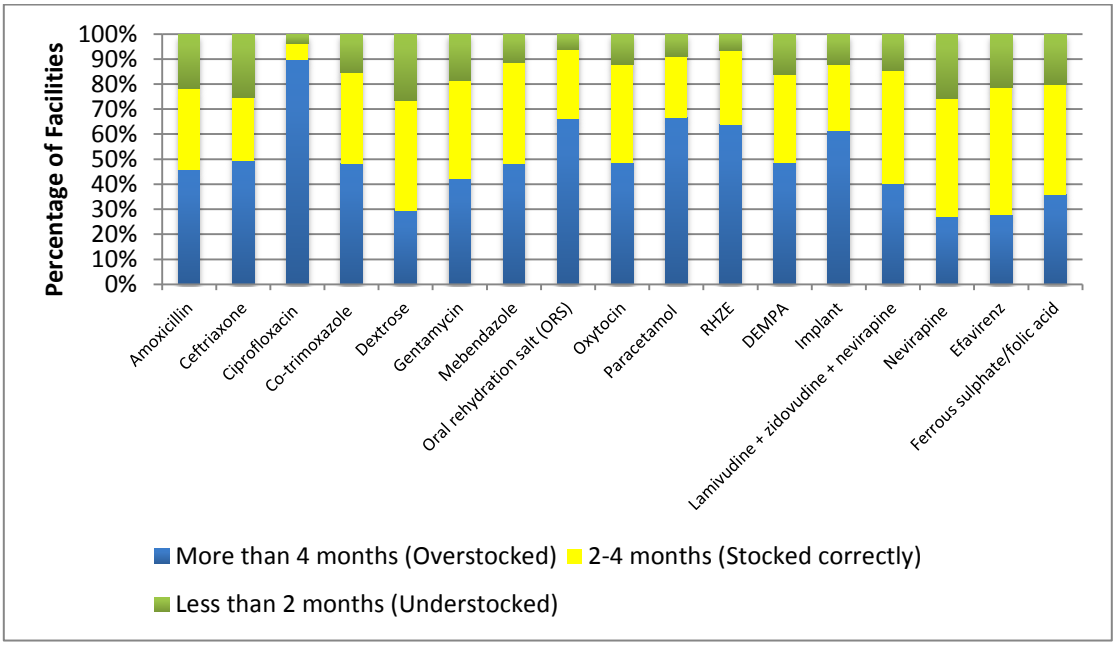
Stock on Hand (Months of Stock)

IPLS introduced minimum and maximum inventory levels for the main stores of health facilities, at all levels. Main stores of hospitals and health centers should have a minimum inventory of two months of stock and a maximum of four months, while health posts should have a minimum of one month of stock and a maximum of two months. Proper commodity management should ensure that inventory levels remain within this set range.

Using issues data to assess a facility's stock status, the average monthly consumption (AMC) was calculated for the previous six months and adjusted for periods of stockouts. The current stock on hand or physical inventory count was divided by AMC to determine how many months of stock were available. For some facilities—particularly health posts and for some products—most of the information needed to calculate this indicator was not available as consumption, or issues data were seldom recorded properly. Therefore, this calculation could only be made for facilities maintaining adequate bin card records.

According to the result presented under figure 23, most facilities are not stocked according to the recommended two to four months of stock. The percentage of facilities stocked correctly ranges between 6 percent for ciprofloxacin and 51 percent for efavirenz; for most products, only between 20-40 percent of facilities are stocked correctly. In almost all products assessed, overstocking is more likely than understocking.

Figure 223. Essential Medicine Stock on Hand on the Day of Visit by Product, January 2014



Comparison with Other Studies

In 2006, the FMOH, in partnership with the USAID | DELIVER PROJECT, conducted a LIAT survey that mainly focused on contraceptives. Since then, the supply chain of the country has undergone several changes, including the implementation of IPLS. Therefore, a comparison could only be made for a few variables. Limited comparisons were also made with other related studies when indicators are believed to have been collected in a similar manner.

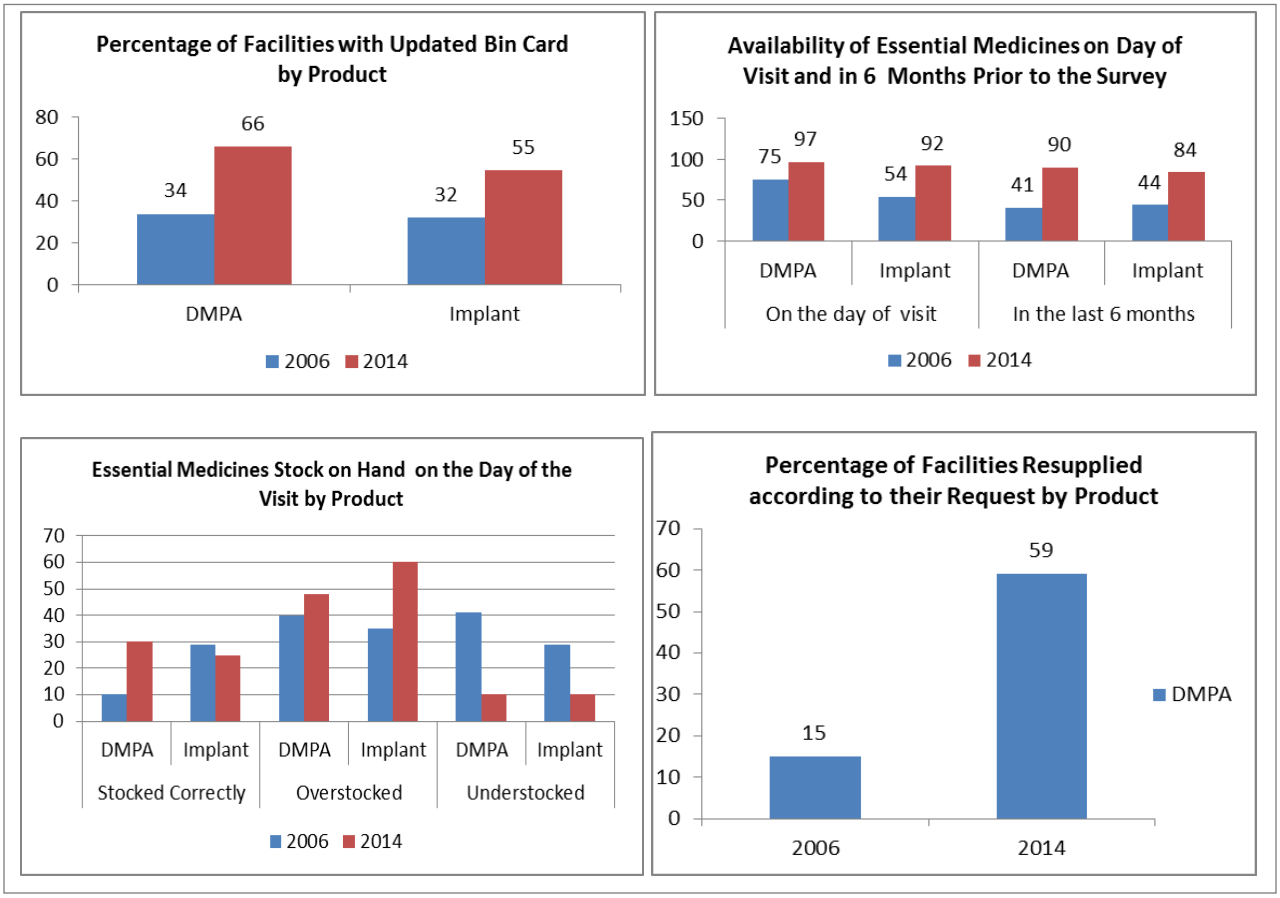
Recording and Reporting

Compared to the 2006 LIAT, the percentage of facilities with updated bin cards has significantly increased from 34 percent to 66 percent for DMPA and from 32 percent to 55 percent for hormonal implants.

Stock Availability

The availability of essential medicines has also significantly increased for the two items monitored in both surveys. According to the 2006 survey, availability on the day of the visit was 75 percent and 54 percent for DMPA and implants, respectively. The IPLS survey result shows an increase of more than 29 percentage points (97 percent for DMPA and 92 percent for implants) compared to the 2006 LIAT. The survey results also show that the order fill rate of DMPA has almost quadrupled—from 15 percent to almost 60 percent. The relatively recent FMOH/United Nations Population Fund (UNFPA) Survey (October 2012) also showed a significant reduction in stockout rates; the facilities with *No Stock Out* at the time of the survey were 96.4 percent for DMPA and 75.4 percent for implants. Likewise, FMOH/FHI data show availability of 89 percent of implants and 96 percent of DMPA on the date of the visit. See figure 24.

Figure 24. Comparison of 2006 LIAT and 2014 IPLS Survey Using Selected Indicators



Conclusion and Recommendations

Conclusion

The survey has provided valuable information that can help measure the level of IPLS implementation at public-sector health facilities and to identify areas to be strengthened. Findings show that IPLS, with some variations by level of health facility and phase, is being implemented in almost all health facilities. Availability and utilization of the logistics management information system (LMIS) formats necessary for recoding and reporting purposes were found to be reasonable; but, there is certainly room for improvement, and discrepancies were observed by level of facility and product types. However, in a considerable percentage of facilitates, data quality is an issue.

Formal capacity building activities using OJT reached most health facilities, particularly phases I and II health facilities. However, training levels were lower in phase III facilities and, in particular, at health posts; a possible reason for the lower performance in most IPLS indicators at these facilities. Most facilities reported receiving technical support through supportive supervision from higher levels; however, fewer health posts reported that the supervision included logistics-related issues.

Meeting the standard storage criteria, another important indicator for proper implementation of IPLS, was a challenge for a significant percentage of health facilities, particularly at hospitals and health posts.

Overall, regardless of facility level or IPLS implementation, the availability of essential medicines is generally good, with some variation by level of facility and product type. However, across products, most facilities are not stocked according to the recommended two to four months of stock. For almost all products assessed, overstocking was higher than understocking, which might lead to stock being wasted or expire.

While it is difficult to draw comparisons because previous studies were either not comprehensive or used different indicators, clearly there have been significant improvements in supply chain indicators and in the availability of essential health commodities since IPLS was implemented. For example, between 2006 and 2014, the use of bin cards for DMPA increased from 34 percent to 66 percent, while the availability of the same item increased from 75 percent to 97 percent. It is worth mentioning that in more than a similar time frame, health outcomes in Ethiopia have shown significant improvement: contraceptive prevalence increased from 13.9 percent in 2006 to 40 percent in 2014.In 2013, Ethiopia achieved Millennium Development Goal IV by reducing under-5 child mortality by two-thirds, from 1990 to 2012. And, in addition, the scale of the healthcare supply chain has grown: in 2003/2004 there were 500 health facilities in the country; by 2013, this had increased to more than 3,400.

Recommendations

- *Availability of formats is a challenge.* The relatively high number of facilities without records like bin cards and RRFs (for example, 20 percent of health centers and 50 percent of health posts did not have bin cards) points to the need for a sustainable funding mechanism to print these forms at the central level and then distribute them regularly to facilities, based on need.

- *The quality of recordkeeping needs to improve.* The utilization of various LMIS formats, while reasonably good, can be improved, particularly at health post–level: only 35 percent of health posts and 66 percent of health centers were keeping a bin card for depot medroxyprogesterone acetate (DMPA); only 21 percent of health posts and 43 percent of health centers had an accurate balance on their bin cards. To improve the skills of health facility staff, intensified efforts, through on-the-job training (OJT) or supervision, on how to complete the forms and records, is needed. Feedback mechanisms for RRFs and using the reports for informed decisionmaking by the health facilities management could also help address this gap.

- *More needs to be done for health posts.* Considering the negligible logistics support they receive, the performance of health posts is encouraging. However, it is lower than other levels of health facilities. Health posts are less likely to have forms and less likely to use them correctly; HEWs are less likely to have received logistics training. It is not surprising that while 97 percent of health centers had co-trimoxazole in stock, only 42 percent of health posts had it in stock. All concerned parties need to strengthen the newly initiated Health Post Resupply Initiative, which includes capacity building through OJT and other approaches, and providing the necessary LMIS, formats.

- *HEWs need formal logistics training.* Only 7 percent of HEWs reported receiving formal training to complete logistics forms. To build on existing initiatives to provide mentoring and OJT to HEWs, mechanisms that ensure the current and new HEWs receive direct training in logistics are also needed. Training can be integrated refresher training, and/or incorporating logistics into curricula for newly recruited HEWs. Just one half-day training (one day would be better) focused on practical skills—using bin cards and HPMRR, for example—would significantly improve work at the health posts.

- *Supportive supervision is working, but many sites are missing out:* Results show that facilities that are supported for relatively longer periods (phases I and II) show better performance than those that only receive limited support (phase III). However, partners cannot continue supporting the same sites while new sites have never received support. Strategies, including graduation of matured facilities, should be designed to shift resources and support to phase III, including newer health centers and health posts.

- *Health facility stores need improvement.* The survey results show that the storage condition for a significant percentage of health facilities did not meet the standard criteria. The FMOH, PFSA, Regional Health Bureaus (RHBs), and partners have been supporting health facilities to upgrade their storage conditions by supplying various types of shelves and other warehouse equipment. This effort should be strengthened and resource mobilization from other sources should be identified to reach more health facilities. Some of the storage issues could also be addressed by reinforcing good logistics management practices and maintaining key storage conditions, such as first-to-expire, first-out (FEFO) and visibility of identification labels and expiry dates.

- *Direct distribution is reaching many facilities but needs to reach more.* PFSA have done a great job with direct delivery: 71 percent of health centers sampled reported having program items delivered. But, more work is needed to increase this percentage.

- *Medicine availability is generally good and has improved dramatically.* The survey demonstrates significant improvements in stock availability at all levels of the health facilities. However, the availability of some items is still low and needs further assessment to identify causes.

- *However, overstocking is a concern.* For the items assessed, stocking products within the recommended minimum-maximum seems to be an issue in most health facilities. Overstocking is a particular

concern. Almost 90 percent of facilities were overstocked with ciprofloxacin. To ensure resources are used wisely and waste is minimized, reinforcing system standards and strictly following the IPLS standard operating procedure (SOP) in requesting and resupplying are required.

- *Involving all stakeholders is necessary to sustain the system*. System sustainability is always an issue when implementing a program. To sustain the system, advocacy and the involvement of all stakeholders—particularly woreda and zonal health officials—in monitoring and following up the implementation of the system should be strengthened.
- *Standard system needed for documenting and reporting expiry data from facilities:* A system to track expiry information at the health facility–level should be designed and implemented because expiry is one of the performance indicators that shows the supply chain efficiency.
- *More focus should be given to monitoring and evaluation of IPLS, including more surveys*. This was the first-ever comprehensive, quantitative study of IPLS implementation. This study—with the same or similar indicators (to enable comparisons over time)—should be repeated, perhaps biannually, complemented with smaller surveys and routine monitoring for certain key indicators. PFSA should also define key performance indicators for IPLS.

Appendix A

Data Tables

Table 7. Percentage of Facilities Where Bin Cards are Available and Updated by Product and IPLS Implementation Phase

Products	Phase			
	Phases I and II		Phase III	
	Available	Updated	Available	Updated
Amoxicillin	90	74	72	60
Artemether + lumfanthrine	66	70	40	67
Ceftriaxone	74	67	48	48
Ciprofloxacin	85	68	66	61
Co-trimoxazole	71	78	72	70
Dextrose	45	51	43	60
Gentamycin	68	55	66	50
Mebendazole	70	60	69	50
Oral rehydration salt (ORS)	59	60	55	53
Oxytocin	29	58	27	69
Paracetamol	80	76	88	59
RHZE	73	60	65	49
DMPA	69	68	60	58
Implant	58	55	54	56
Lamivudine + zidovudine + nevirapine	80	74	88	55
Nevirapine	66	57	69	52
Efavirenz	81	72	79	59
Pentavalent vaccine	55	62	49	42
PCV10 vaccine	33	66	23	63
Ferrous sulphate/folic acid	29	46	33	37
Arthemeter	51	69	44	64
Giemsa stain 0.76% solution/powder	18	42	27	38
KHB	47	57	41	54
Acid alcohol 1 solution	34	55	30	37
Blood lancet	41	56	35	61
Microscope slide	15	86	10	100
EDTA tube	14	95	10	100

Table 8. Percentage of Health Facilities with Accurate or Near-Accurate Balance Entries by Product and Facility Types

Products	Phases I and II		Phase III	
	Accurate Balance	Within 10% Accuracy	Accurate Balance	Within 10% Accuracy
Amoxicillin	48	81	52	82
Ceftriaxone	65	80	68	93
Ciprofloxacin	42	75	45	71
Co-trimoxazole	46	72	50	80
Dextrose	64	77	48	68
Gentamycin	57	83	60	79
Mebendazole	54	81	52	75
Oral rehydration salt (ORS)	48	83	50	78
Oxytocin	53	80	63	75
Paracetamol	50	77	36	75
RHZE	48	80	49	74
Depo-Provera	45	67	38	68
Implant	51	70	50	69
Lamivudine + zidovudine + nevirapine	43	77	59	81
Nevirapine	65	84	55	76
Efavirenz	47	69	47	71
Ferrous sulphate/folic acid	64	79	42	84

Table 9. Availability of Essential Pharmaceuticals on Day of Visit by Facility Type

	Products	Hospitals	Health Centers	Health Posts	Total
1	Amoxicillin 500mg/250mg capsule	97	95		95
2	Artemether + lumfanthrine (20mg + 120mg tablet (any packing)	86	89	86	88
3	Ceftriaxone(1gm/500mg injection)	81	87		86
4	Ciprofloxacin 500mg tablet	89	91		90
5	Co-trimoxazole 240mg/5ml suspension, 100ml	100	97	42	93
6	Dextrose in normal saline with giving set	71	65		66
7	Gentamycin 80mg/2ml ampoule, injection	80	84		84
8	Mebendazole100mg/albendazole 400mg tablet	94	92	75	90
9	Oral rehydration salt (ORS)	97	97	86	95
10	Oxytocin 10 units/ml in 0.5ml and 1-ml ampoule injection	97	93		94
11	Paracetamol 500mg tablet	95	98		98
12	RHZE 150mg/75mg + 400mg + 275mg tablet	100	97		97
13	DMPA	92	98	98	97
14	Implant 68mg implant (Implanon) or levonorgestrel 75mg implant (Jadelle)	89	93	89	92
15	Lamivudine + zidovudine + nevirapine (150mg + 300mg + 200mg) tablet	97	98		98
16	Nevirapine 10mg/ml oral suspension	94	95		95
17	Efavirenz 600mg capsule	96	94		94
18	Pentavalent vaccine (DTP + HepB + Hib) 2-dose vial of lyophilised Hib vaccine to be reconstituted with liquid DTP-HepB	100	94	53	89
19	PCV10 vaccine 2-dose vial	100	94		95
20	Ferrous sulphate/folic acid	97	86		88
21	Arthemeter injection	86	81		81
22	Giemsa stain 0.76% solution	28	34		33
23	KHB	100	94		95
24	Acid alcohol 1% solution	94	91		92
25	Blood lancet	94	96		95
26	Microscope slide	94	96		96
27	EDTA tube	86	88		88

Table 10. Availability of Essential Pharmaceuticals on Day of Visit by IPLS Implementation Phase

	Products	Phase I and II	Phase III
1	Amoxicillin 500mg/250mg capsule	97	93
2	Artemether + lumfanthrine (20mg + 120mg tablet (any packing)	90	85
3	Ceftriaxone (1gm/500mg injection)	86	85
4	Ciprofloxacin 500mg tablet	94	82
5	Co-trimoxazole 240mg/5ml suspension, 100ml	98	96
6	Dextrose in normal saline with giving set	68	60
7	Gentamycin 80mg/2ml ampoule, injection	87	77
8	Mebendazole100mg/albendazole 400mg tablet	93	92
9	Oral rehydration salt (ORS)	97	97
10	Oxytocin 10units/ml in 0.5ml and 1 ml ampoule injection	94	93
11	Paracetamol 500mg tablet	97	100
12	RHZE 150mg/75mg + 400mg + 275mg tablet	97	98
13	DMPA	96	99
14	Implant 68mg implant (Implanon) or levonorgestrel 75mg implant (Jadelle)	92	93
15	Lamivudine + zidovudine + nevirapine (150mg + 300mg + 200mg) tablet	97	100
16	Nevirapine 10mg/ml oral suspension	94	95
17	Efavirenz 600mg capsule	95	93
18	Pentavalent vaccine (DTP + HepB + Hib) 2-dose vial of lyophilised Hib vaccine to be reconstituted with liquid DTP-HepB	99	84
19	PCV10 vaccine 2-dose vial	97	91
20	Ferrous sulphate/folic acid	89	84
21	Arthemeter injection	81	83
22	Giemsa stain 0.76% solution	34	33
23	KHB	97	89
24	Acid alcohol 1% solution	95	84
25	Blood lancet	95	96
26	Microscope slide	95	96
27	EDTA tube	88	86

Appendix B

List of Indicators

Indicators	Data Source
Logistics management practices	
Percentage of facilities using bin cards	Presence of bin cards in facilities and stores
Percentage of facilities with bin cards available and updated by product	Presence of bin cards and evidence of utilization in facilities and stores
Percentage of facilities with accurate stock balances on bin cards	Comparison of bin card balance and physical inventory count
Percentage of facilities with accurate RRF reports	Comparison of the stock balance on the most recent RRF report and on the bin card
Percentage of facilities that completed and submitted an RRF report for the most recent reporting period	Presence of RRF reports and evidence of utilization in facilities and stores
Percentage of facilities utilizing IFRR reports in major dispensing units	Presence of IFRR reports and evidence of utilization in facilities and stores
Percentage of facilities that had to place an emergency order	Respondent
Personnel	
Percentage of personnel trained in product management and type of training received	Respondent
Percentage of facilities receiving supervision within a reasonable amount of time	Respondent
Percentage of facilities receiving logistics supervision within a reasonable amount of time	Respondent
Transportation	
Percentage of transportation type used for logistics management	Respondent
Product Availability	
Percentage of sites stocked out of product at time of visit	Records, respondent, and physical inventory
Percentage of sites stocked out of product in last 6 months	Records and respondent
Average number of days stocked out in 6 months	Records and respondent
Percentage of sites stocked according to plan; months of supply on hand	Average monthly consumption, physical count of product at health facilities
Storage	
Percentage of facilities meeting all (or a desired percentage) of the storage conditions	Visual observation

Appendix C

Storage Guidelines Used in the Survey

- Pharmaceuticals are arranged and organized according to a logical categorization.
- Bin cards are used and updated regularly? (Observe by checking five or more sample bin cards.)
- Unwanted items (damaged or expired drugs, non-pharmaceutical items, etc.) are separated from the usable stock (in the store or outside).
- Products are arranged so ID labels, expiry dates, and/or manufacturing dates are visible.
- Products are stored and organized in a manner that facilitates use of first-to-expire, first-out (FEFO).
- Products are protected from direct sunlight and high heat at all times of the day/during all seasons.
- Storeroom is maintained in good condition (clean, no trash, sturdy shelves, and boxes well-organized).
- Current space and organization is sufficient for existing products and reasonable expansion (i.e., receipt of expected product deliveries for foreseeable future).
- Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel.
- Storage area is visually free from harmful insects and rodents. (Check the storage area for traces of bats and/or rodents [droppings or insects].)
- Cartons and products are in good condition, not crushed due to mishandling. If cartons are open, determine if products are wet or cracked due to heat.

Appendix D

Survey Tool

INTEGRATED PHARMACEUTICALS LOGISTICS SYSTEM SURVEY
DATA COLLECTION TOOL

Informed Consent

Introduce all team members and ask facility representatives to introduce themselves.

Good day. My name is _____. My colleague and I are representing PFSA. We are conducting a survey regarding the health commodity logistics system, particularly related with the implementation of IPLS at the health facility level. We are looking at the availability of selected commodities and information about how you order and receive those products. We are visiting selected health facilities throughout the country; this facility was randomly selected to be in the survey. The objectives of the survey are to collect current information on IPLS performance and stock status of key health products. This is not a supervisory visit and the performance of individual staff members is not being evaluated.

The results of this national survey will provide information to make decisions and to promote improvements in implementing IPLS. The survey will be conducted again in the future to measure changes in the logistics system.

We would like to ask the store manager/pharmacy head a series of questions about the products and supplies available at this facility. In addition, we would like to actually count selected products you have in stock today and observe the general storage conditions.

Do you have any questions?

May I begin the interview now?
RESPONDENT AGREES TO BE INTERVIEWED ……..... 1 ⟶ CONTINUE THE INTERVIEW
RESPONDENT DOES NOT AGREE TO BE INTERVIEWED.....2 ⟶ END THE INTERVIEW

Ask the in-charge to introduce the team to the person managing commodities. Extend the invitation to the in-charge to stay with the team but explain that we are aware that they have other responsibilities. Offer to check back with him/her before leaving the facility.

ARTICLE I.....INFORMATION ABOUT INTERVIEW

Date:	DAY MONTH YEAR ☐☐ ☐☐ ☐☐☐☐
Interviewer/s Name: _____ _____	

First, ask the following questions of the in-charge or pharmacy head/store manager. After asking questions 01 -06 under section I, visit the storeroom, or storage area where the health products listed are managed. If you are referred to another staff member for the stocktaking exercise, introduce the survey goals and objectives as you did during the introduction. Hand the respondent the list of products that are included in the survey, and explain that we will refer to the list for some of the following questions.

Section I: Background Characteristics of the Respondent

No.	Question	Code Classification	Go To
01.	**Name, title and mobile phone number of person interviewed for this survey**	Name: _____ Title: _____ Mobile number: _____	
02.	**Number of years and months you have worked at this facility?**	Years: _____ Months: _____	
03.	**Are you the primary person responsible for managing drugs and medicine products at this facility?**	Yes.....1 No……0	
04.	How many staff the facility has under the pharmacy unit?	Number of pharmacy unit staff /_____/	
05.	How many of them are trained in IPLS?	Number trained /_____/	
06.	Educational qualification of pharmacy unit staff	# of staff with Degree /_____/ # of staff with Diploma /_____/ Other # /_____/	

Section II: Facility Services and Infrastructure

No.	Question	Code Classification	Go To/ Comments
01.	Name of the facility		
02.	Region		
03.	Zone		
04.	Woreda		
05.	City/town:		
06.	Supplying Hub:		
07.	Facility Code:		
08	Type of facility	1=PFSA Center 2=PFSA hub 3= Hospital 4= Health centre 5=Health Post 6=Other _____	
09	Provide ART Service	1=Yes 2=No	
10	Product Delivery Modalities from PFSA	1=Direct 2=Indirect	
11	Availability of the following facilities at the health facility:		
	Paved Road to the facility	1=Yes 2=No	
	Operational electricity on day of visit	1=Yes 2=No	
	Operational water in the building on the day of visit	1=Yes 2=No	
	Operational telephone (land line or mobile)	1=Yes 2=No	
12	Availability of the following facilities at the health facility store:		
	Operational electricity on day of visit	1=Yes 2=No	
	Operational water in the room on the day of visit	1=Yes 2=No	
	Operational telephone (land line or mobile)	1=Yes 2=No	
	Operational Computer	1=Yes 2=No	
	Internet Access	1=Yes 2=No	

Section III. IPLS Implementation

No.	Questions	Code Classification	Go To/ Comments
01	Are the following LMIS Formats, Job Aides and SOPs are available at the facility? **(Ask for documents to verify)**		
	Bin Cards	Yes 1 No 0	
	Health Post Monthly Report and Re-supply form (HPMRR)	Yes 1 No 0	
	Internal Facility Report and Requisition Voucher (IFRR)	Yes 1 No 0	
	Facility Report and Requisition Form (RRF)	Yes 1 No 0	
	Standard Operation Procedure (SOP) for IPLS	Yes 1 No 0	
	If health post, health post job aids/flip books	Yes 1 No 0	
	If health post, health post job aids/flip books and posters,	Yes 1 No 0	
02	Do you use the following stock keeping logistics forms to manage health products in this facility? **Must be verified by checking sample completed bin cards**		
	A. Bin Cards	Yes 1 No 0	
	B. Other (specify)_____	Yes 1(specify)_____ No 0	
03.	What LMIS forms do you use for reporting/ordering? **Multiple responses are possible.** **Must be verified with completed report**		
	A. IFRR	Yes 1 No 0	
	B. RRF	Yes 1 No 0	
	C. HPMRR	Yes 1 No 0	
	D. Other	Yes (specify) _____ 1 No 0	
04	The health facility compiles and sends RRF or HPMRR (if health post) reports to higher level?	Yes 1 No 0	If No➔09

05	If yes, to who: **Multiple responses are possible.** **DO NOT READ THE RESPONSES**	PFSA……A RHB……..B Zone Health Office……..C WoHO……D Resupply Health Center..……E Don't Know……F Other (specify)_____W	
06	If yes, how often are these LMIS (RRF or HPMRR) reports sent to the higher level? **Multiple responses are possible.** **DO NOT READ THE RESPONSES**	Monthly ..... A Bimonthly (every two months)…..……B Quarterly……..C Semi-annually…… D Annually ..... E Other _____ W	
07.	When was the last time this facility sent RRF or HPMRR? **Must be verified with completed report**	Never ..... 1 Within the last month……..2 2 months ago ..... 3 3 months ago ..... 3 More than 3 months ago…… 4	
08.	Does all the columns in RRF/HPMRR are completed for all medicines? **Must be verified with last completed report.**	Yes 1 No 0 Completed report not available 9	
09.	Do major dispensing units (DUs) use IFRR for regular reporting? **Only for health centers and hospitals** **Must be verified with completed report**		**If health post➔**12
	OPD	Yes 1 No 0 NA 99	
	ART	Yes 1 No 0 NA 99	
	MCH	Yes 1 No 0 NA 99	
	LAB	Yes 1 No 0 NA 99	
	TB	Yes 1 No 0 NA 99	
10.	If health center, how many health posts are served under the health center? (only for health centers)	_____	

11.	If health center, how many health posts submitted HPMRR reports in the past three months (three month prior to survey month)? **Note:** health posts submitted two or three reports should only be counted once.	_____ Ask to see reports and check here # of reports verified. _____	
12.	How did you learn to complete the forms/records used at this facility? **Multiple responses are possible.** ***(a)***	Formal Trainings IPLS……A Pre service Trainings……..B Other formal trainings (Specify)_____C On-the-job training (other staff from facility) ……D On-the-job training (someone outside facility)…….....E Never been trained……..F Other (specify)_____W	
13.	How many emergency orders have you placed in the last 3 months? **If available, ask for documents to verify using RRF**	None..... 0 1 ..... 1 2 ..... 2 3 ..... 3 More than 3……..4 NA 5	
14.	Who determines this facility's resupply quantities? *(b)* **Multiple responses are possible.**	The facility itself ..... A Higher-level facility (Health Center, PFSA/Woreda/Zone/RHB) ..... B Other _____W	
15	What are the direct sources of supply for the following the **program commodities** at this facility? **Multiple responses are possible.**		
	HIV and OI	PFSA……A RHB……..B ZHD……..C Woreda……D Health Center……E Other (specify)_____W	
	TB	PFSA……A RHB……..B ZHD……..C Woreda……D Health Center……E Other (specify)_____W	
	Family Planning	PFSA……A RHB……..B ZHD……..C Woreda……D Health Center……E Other (specify)_____W	

	Malaria	PFSA……A RHB……..B ZHD……..C Woreda……D Health Center……E Other (specify)_____W	
16	If multiple responses, what is the usual source (or most common source) **Select only one answer**		
	HIV and OI	PFSA……1 RHB……..2 ZHD……..3 Woreda HO……4 Health Center……5 Other (specify)_____..6	
	TB	PFSA……1 RHB……..2 ZHD……..3 Woreda HO……4 Health Center……5 Other (specify)_____..6	
	Family Planning	PFSA……1 RHB……..2 ZHD……..3 Woreda HO……4 Health Center……5 Other (specify)_____..6	
	Malaria	PFSA……1 RHB……..2 ZHD……..3 Woreda HO……4 Health Center……5 Other (specify)_____..6	
17	What are the sources of supply for RDF commodities at this facility? **Multiple responses are possible.**	PFSA……A RHB……..B ZHD……..C Woreda……D Health Center……E Other (specify)_____W	
18	If multiple responses, what is the usual source (or most common source) **Select only one answer**	PFSA……1 RHB……..2 ZHD……..3 Woreda HO……4 Health Center……5 Other (specify)_____..6	
19	On average, for a normal order approximately how long does it take between sending an order and receiving product from main resupply point?	Less than 2 weeks ..... 1 2 weeks to 1 month ..... 2 Between 1 and 2 months ..... 3 More than 2 months 4	

20	Does the facility usually get the quantities of products it orders?	Yes 1 No 0 Don't know 9	**If YES or DK** ➔22
21	If no, why not? _____	The resupply point does not have adequate supply……A The resupply point was stocked out….B Order amount changed at the resupply point……C Other (specify)_____W	
22	Does this facility normally collect or are the pharmaceuticals/commodities delivered?		
	Program Commodities	Collect……1 Are delivered……..……..2 Both (explain) _____.....3	
	RDF	Collect……1 Are delivered……..……..2 Both (explain) _____.....3	
23	Who is responsible for transporting products to your facility?		
	(c) **Program Commodities** **Multiple responses are possible.**	PFSA……A RHB……..B ZHD……..……..C Woreda……D Hospital……E Health Center……..……F Health Post……G Other (specify)_____W	
	RDF **Multiple responses are possible.**	PFSA……A RHB……..B ZHD……..……..C Woreda……D Hospital……E Health Center……..……F Health Post……G Other (specify)_____W	
24	If you collect, what type of transportation is most often used?	Facility vehicle ..... 1 Public transportation ..... 2 Private vehicle ..... 3 Motorcycle ..... 5 Bicycle ..... 6 On foot ..... 7 *(d)* Other (specify) _____ 9	
25	Distance from usual resupply point (approximately)	/_____/KM /___/____/ time Hr min	

26	When did you receive your most recent supervision visit? **Check visitors book, if necessary.**	Never received ..... 1 Within the last month ..... 2 1 - 3 months ago ..... 3 3 - 6 months ago ..... 4 More than 6 months ago ..... 5 i. *Other (specify)* _____ *9*	**If never received** ➔section 2
27	Did your last supervision visit include drug management/logistics (e.g., bin cards checked, logistics reports checked, storage conditions checked, etc.)?	Yes 1 No 0 Don't know 9	
28	The last supervision visit that included drug management was by: **Multiple responses are possible.**	PFSA……A RHB……..B Zone Health Office……..C Woreda……D Health Center……E Partner(specify)_____ F Other (specify)_____W	

Section IV. Product Availability

Table 1. Stock Status (Specify a full six month period prior to the survey; and the day of visit)

Column:
1. Name of all authorized products that will be counted
2. Unit of count for the product

Note*:* Columns 1 and 2 will be filled out before questionnaires are printed for the survey.

3. Record whether or not the product is managed at this facility, answer Y for yes or N if no.
4. Check if the bin card is available, answer Y for yes or N for no.
5. Check if the bin card has been updated within the last 30 days, answer Y for yes or N for no. Note: If the bin card was last updated with the balance of 0 and the facility has not received any resupply, consider the bin card up-to-date.
6. Record the balance on the bin card.
7. Record if the facility has had any stockout of the product during the 6 month period from XXX 1 – XXX, 2013, answer Y for yes or N for no.
8. Record how many times the product stocked out during the 6 month period from XXX 1 – XXX, 2013 according to bin cards, if available.
9. Record the total number of days the product was stocked out between XXX 1 – XXX, 2013, only.
10. Record the quantity of product issued from the storeroom between XXX 1 – XXX, 2013, only.
11. Record the number of months the issued data represents (may be 6 months or less); record the months for which there is any data available, including 0.
12. Record the physical count in the storeroom.
13. Record if the facility experiencing a stockout of the product on the day of the visit, answer Y for yes or N for no. If products are available outside the storeroom there is no stockout. Visually verify that usable products are in stock.
14. Record if the facility has expired products. If there are products that are near expiry (within one month), note the product and quantity in the comments section.

Maximum months of stock_____ Minimum months of stock _____ Order interval_____

Note: For any product that experienced a stockout in the last six months (including the day of the visit), please note reasons (by product).

	Product	Units of count	Managed at this facility? (Y/N)	Bin card available? (Y/N)	Bin card updated? (Y/N)	Balance on bin card	Stockout most recent 6 months (Y/N)	Number of stockouts	Total number of days stocked out	Total issued (most recent 6 months)	Number of Months of data available	Physical inventory — Store room	Stockout today? (Y/N)	Availability of expired product (Y/N
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Amoxicillin 500mg/250 mg Capsule	10												
2	Arthmeter + Lumfanthrine – 20mg + 120mg tablet (any packing)	Pcs												
3	Ceftriaxone 1gm/500mg injection	Vial												
4	Ciprofloxacin 500mg tablet	10												
5	Co-trimoxazole 240mg/5ml suspension, 100ml	Bottle												
6	Dextrose in normal saline with giving set	Bag												
7	Gentamycin 80mg/2ml ampoule, injection	Ampoule												
8	Mebendazole tablet													
9	Oral Rehydration Salt (ORS)	Sachet												
10	Oxytocin 10units/ml in 0.5ml and 1 ml ampoule injection	Ampoule												
11	Paracetamol 500mg tablet	10												
12	RHZE-150mg/75mg+400mg +275mg-tablet	24X28												
13	Medroxyprogesterone Acetate 150mg/ml in 1 ml vial (Depo-Provera) Injection with 1 ml syringe and needle	Vial												
14	Ethnogestril 68mg Implant (Implanon) or Levonorgestrel 75mg Implant (Jadelle)	Set												
15	Lamivudine + Zidovudine + Nevirapine (150mg + 300mg + 200mg) tablet	Bottle/Pk of 60												
16	Nevirapine 10mg/ml oral suspension	Bottle												

	Product	Units of count	Managed at this facility? (Y/N)	Bin card available? (Y/N)	Bin card updated? (Y/N)	Balance on bin card	Stockout most recent 6 months (Y/N)	Number of stockouts	Total number of days stocked out	Total issued (most recent 6 months)	Number of Months of data available	Physical inventory — Store room	Stockout today? (Y/N)	Availability of expired product (Y/N
17	Efavirenz 600mg capsule	30												
18	Ferrous sulphate + folic acid													
19	Quinine Dihydrochloride 300mg/ml in ml ampoule injection	10												
20	Giemsa stain 0.76 % solution	Bottle												
21	KHB	Test												
22	Acid alcohol 1% solution	Bottle												
23	Blood lancet	Pcs												
24	Microscope slide	Pcs												
25	EDTA Tube	Pcs												
	Comments:													

Table 2: Stock Status in Dispensary Units

Column:

1. Name of all authorized products that will be assessed
2. Unit of count for the product balance of 0 and the dispensing unit has not received any resupply, consider the bin card up-to-date.
3. Record if the dispensing unit experiencing a stockout of the product on the day of the visit, answer Y for yes or N for no. Visually verify that usable products are in stock.

	Product	Units of count	OPD	ART	MCH	TB	IPD
			Stockout today? (Y/N)	Stockout today? (Y/N)	Stockout today? (Y/N)	Stockout today? (Y/N)	Stockout today? (Y/N)
	1	2	3	3	3	3	3
1	Amoxicillin 500mg/250 mg Capsule	10	X	X			X
2	Arthmeter + Lumfanthrine – 20mg + 120mg tablet (any packing)	Pcs	X				
3	Ceftriaxone 1gm/500mg injection	Vial	X	X			X
4	Ciprofloxacin 500mg tablet	10	X	X			X
5	Co-trimoxazole 240mg/5ml suspension, 100ml	Bottle	X	X			X
6	Dextrose in normal saline with giving set	Bag	X	X	X		X
7	Gentamycin 80mg/2ml ampoule, injection	Ampoule	X	X			X
8	Mebendazole tablet		X	X			
9	Oral Rehydration Salt (ORS)	Sachet	X	X			X
10	Oxytocin 10units/ml in 0.5ml and 1 ml ampoule injection	Ampoule	X		X		
11	Paracetamol 500mg tablet	10	X	X			
12	RHZE-150mg/75mg+400mg+275mg-tablet	24X28				X	
13	Medroxyprogesterone Acetate 150mg/ml in 1 ml vial (Depo-Provera) Injection with 1 ml syringe and needle	Vial			X		
14	Ethnogestril 68mg Implant (Implanon) or Levonorgestrel 75mg Implant (Jadelle)	Set			X		
15	Lamivudine + Zidovudine + Nevirapine (150mg + 300mg + 200mg) tablet	Bottle/Pk of 60		X			
16	Nevirapine 10mg/ml oral suspension	Bottle		X	X		
17	Efavirenz 600mg capsule	30		X			
18	Ferrous sulphate + folic acid		X		X		
19	Quinine Dihydrochloride 300mg/ml in ml ampoule injection	10X10					X
20	Giemsa stain 0.76 % solution	Bottle					
21	KHB	Test			X		
22	Acid alcohol 1% solution	Bottle				X	
23	Blood lancet	Pcs					
24	Microscope slide	Pcs					
25	EDTA Tube	Pcs					

Section V. Product Wastage

Table 3: Product Wastage (Specify a full one year period prior to the survey; and the day of visit)

1. Identify Model numbers of pharmaceuticals received in the specified years
2. Calculate total cost of pharmaceuticals for the specified year for all drugs (RDF and program) from Model19
3. Record the quantity of pharmaceuticals expired/damaged in the specified year
4. Take the unit price of each expired product from model 19; if not available, take the current price
5. Calculate cost of pharmaceuticals lost due to expiry, damage and loss for all pharmaceuticals

Note: The total value of pharmaceuticals expired in the specified year from disposal registration form if expired drugs were disposed

	Cost of pharmaceutical purchased for the specified year	**Cost of pharmaceuticals lost due to expiry, loss or damage**

Section VI. Storage Conditions

Table 4. Storage Conditions

Items 1 -11 should be assessed for all facilities for products that are ready to be issued or distributed to clients. Place a check mark in the appropriate column based on visual inspection of the storage facility; note any relevant observations in the comments column**. *To qualify as "yes," all products and cartons must meet the criteria for each item.***

No	b. *Description*	No	Yes	Comments
01.	Pharmaceuticals are arranged & organized according to a logical categorization, e.g. zoning			
02.	Bin Cards are used & updated regularly? (Observe by checking a five or more sample BCs.)			
03.	Are unwanted items (damaged or expired drugs, non-pharmaceutical items, etc.) in the store room separated from the usable stock?			
04.	Products are arranged so that ID labels, expiry dates, and/or manufacturing dates are visible.			
05.	Products are stored & organized in a manner which facilitates use of First-to-expire, first-out (FEFO).			
06.	Products are protected from direct sunlight and high heat at all times of the day/during all seasons.			
07.	The storeroom is maintained in good condition (clean, no trash, sturdy shelves, and boxes well-organized).			
08.	The current space and organization is sufficient for existing products and reasonable expansion (i.e., receipt of expected product deliveries for foreseeable future).			
09.	Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel.			
10.	Storage area is visually free from harmful insects and rodents. (Check the storage area for traces of bats and/or rodents [droppings or insects].)			
11.	Cartons and products are in good condition, not crushed due to mishandling. If cartons are open, determine if products are wet or cracked due to heat/radiation			

Section VII. LMIS Data Quality

Table 5. LMIS Data Quality: Usable Stock on Hand at Time of Most Recent LMIS Report
Column:

1. Will be pre-populated with the same products as in table 1.
2. Whether or not the product is managed at this facility, answer Y for yes or N if no.
3. Check if the bin cards and RRF are available, answer Y for yes or N for no.
4. Get the most recent RRF report showing the selected products, and record the stock on hand from the RRF report in column 3.
5. Write the quantity of usable stock on hand from the bin card from the time of the selected RRF report.
6. Note the reasons for any discrepancy.

	Usable Stock on Hand (at time of most recent LMIS report)				
Product	**Managed at the facility** **No=0** **Yes = 1**	**Are order records available (bin card and RRF)?** *(If NO to RRF or bin card skip to next item – only use acceptable data sources)* **No=0** **Yes = 1**	**According to most recent RRF report**	**From bin card from time of RRF report**	**Reasons for discrepancy**
1	**2**	**3**	**4**	**5**	**6**
Amoxicillin capsule					
Arthmeter + Lumfantrine tablet					
Ceftriaxone injection					
Ciprofloxacin tablet					
Co-trimoxazole 240mg/5ml susp					
Dextrose with normal saline					
Gentamycin injection					
Mebendazole tablet					
Oral Rehydration Salt (ORS)					
Paracetamol tablet					
Refampicine / Isoniazide / Pyrazinamide / Ethambutol					
Medroxyprogesterone (depo) Injection					
Lamivudine + Zidovudine + Nevirapine (150mg + 300mg + 200mg) tablet					
Nevirapine syrup					
Efaverenze 600mg capsule					

Section VIII. Order Fill Rate

Table 6. Percentage Difference between Quantity Ordered and Quantity Received

Column:

1. List the same products as in table 1 or use a sample of those products.
2. Whether or not the product is managed at this facility, answer Y for yes or N if no.
3. Check if the bin cards and RRF are available, answer Y for yes or N for no.
4. Enter the quantity ordered for the last order period for which products should have been received (i.e., don't include open orders whose expected receipt date has not arrived).
5. Enter the quantity received in the last order.

Product	Managed at the facility No=0 Yes = 1	Are RRFs available? No=0 Yes = 1 *(If NO Skip to next item – only use acceptable data sources)*	Quantity Ordered For Last Order Period	Quantity Received In Last Order/Procurement	Reasons for discrepancy
1	2	3	4	5	
Amoxicillin capsule					
Arthmeter + Lumfantrine tablet					
Ceftriaxone injection					
Ciprofloxacin tablet					
Co-trimoxazole 240mg/5ml susp					
Dextrose with normal saline					
Gentamycin injection					
Mebendazole tablet					
Oral Rehydration Salt (ORS)					
Paracetamol tablet					
Refampicine / Isoniazide / Pyrazinamide / Ethambutol					
Medroxyprogesterone (depo) Injection					
Lamivudine + Zidovudine + Nevirapine (150mg + 300mg + 200mg) tablet					
Nevirapine syrup					
Efaverenze 600mg capsule					

Ask the person/people you interviewed if they want to ask you any questions.

Comments or general observations on products management:

Thank the person/people who talked with you. Reiterate how they have helped the program achieve its objectives, and assure them that the results will be used to develop improvements in logistics system performance.

Notes/Comments

Appendix E

Sampled Facilities

Table 11. Sampled Health Facilities by Region

Region	Type of Facility			Total
	Hospital	Health Center	Health Post	
Addis Ababa	4	8	0	12
Afar	2	10	2	14
Amhara	5	36	10	51
Benishangul	2	7	2	11
Dire Dawa	1	4	0	5
Gambela	1	7	1	9
Harar	2	3	1	6
Oromiya	7	45	11	63
SNNP	5	36	9	50
Somali	3	11	1	15
Tigray	5	20	5	30
Total	**37**	**187**	**42**	**266**

For more information, please visit deliver.jsi.com.

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THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

PHARMACEUTICALS FUND AND SUPPLY AGENCY

Tel: +251.011.275.1770

Fax: +250.011.275.2555

P.O. Box 21904

Addis Ababa, Ethiopia

Email: pfsa@ethionet.et