



# Ethiopia: National Survey on the Integrated Pharmaceutical Logistics System (IPLS)

September, 2018





## **Ethiopia: National Survey of the Integrated Pharmaceutical Logistics System**

## **AIDSFree**

The Strengthening High Impact Interventions for an AIDS-free Generation (AIDSFree) Project is a five-year cooperative agreement funded by the U.S. Agency for International Development under Cooperative Agreement AID-OAA-14-000046. AIDSFree is implemented by JSI Research & Training Institute, Inc. with partners Abt Associates Inc., Elizabeth Glaser Pediatric AIDS Foundation, EnCompass LLC, IMA World Health, the International HIV/AIDS Alliance, Jhpiego Corporation, and PATH. AIDSFree supports and advances implementation of the U.S. President's Emergency Plan for AIDS Relief by providing capacity development and technical support to USAID missions, host-country governments, and HIV implementers at the local, regional, and national level.



## **Recommended Citation**

Ethiopia Pharmaceutical Supply Agency (EPSA), 2019. Ethiopia, National Survey of the Integrated Pharmaceutical Logistics System: AIDSFree, and Pharmaceutical Supply Agency (EPSA).

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## **Abstract**

Since 2009, the Pharmaceutical Supply Agency (EPSA) has implemented the Integrated Pharmaceutical Logistics System (IPLS) to manage essential health commodities in the public sector. This report describes the findings from a survey on the status of IPLS implementation and its performance at health facilities within the public sector.

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## CONTENT

<b>TABLES</b> .....	<b>vi</b>
<b>FIGURES</b> .....	<b>vii</b>
<b>ACRONYMS</b> .....	<b>ix</b>
<b>Foreword</b> .....	<b>x</b>
<b>Acknowledgement</b> .....	<b>xi</b>
<b>INTRODUCTION</b> .....	<b>1</b>
<b>METHODOLOGY</b> .....	<b>2</b>
<b>Study Population</b> .....	<b>2</b>
<b>Sample size determination</b> .....	<b>3</b>
Sample Selection Procedures.....	<b>4</b>
<b>Survey tool</b> .....	<b>5</b>
<b>Data collection</b> .....	<b>5</b>
<b>Data management</b> .....	<b>5</b>
<b>Quality assurance</b> .....	<b>6</b>
<b>Ethical considerations</b> .....	<b>6</b>
<b>Limitations</b> .....	<b>6</b>
<b>Survey Findings and Discussion</b> .....	<b>7</b>
<b>Facility description</b> .....	<b>7</b>
<b>Logistics System Management Practices</b> .....	<b>10</b>
<b>Availability of SOPs and health post job aids</b> .....	<b>10</b>
<b>Logistics Data Recording Practices</b> .....	<b>11</b>
<b>Logistics Reporting Practices</b> .....	<b>20</b>
<b>Human resource and training</b> .....	<b>31</b>
<b>Professionals in pharmacy units</b> .....	<b>31</b>
<b>IPLS training</b> .....	<b>32</b>
<b>Storage conditions</b> .....	<b>35</b>

<b>Storage conditions fulfillment .....</b>	<b>35</b>
<b>Cold chain equipment for vaccines storage.....</b>	<b>37</b>
<b>Transportation and distribution .....</b>	<b>41</b>
<b>    Primary immediate sources of supply .....</b>	<b>41</b>
<b>    Transportation and modes of delivery.....</b>	<b>42</b>
<b>    EPSA delivery accompanied by pharmacy professional.....</b>	<b>43</b>
<b>Supervision.....</b>	<b>44</b>
<b>Supply chain performance .....</b>	<b>45</b>
<b>    Stock availability.....</b>	<b>45</b>
<b>    Emergency order.....</b>	<b>53</b>
<b>    Wastage .....</b>	<b>55</b>
<b>    Inventory turnover.....</b>	<b>56</b>
<b>    EPSA Share in Product Supply.....</b>	<b>57</b>
<b>    Order Fill Rate.....</b>	<b>57</b>
<b>    Delivery Lead Time.....</b>	<b>59</b>
<b>Conclusions and Recommendations .....</b>	<b>61</b>
<b>Annex 1: Result Tables .....</b>	<b>65</b>
<b>Annex 2: Integrated Pharmaceutical Logistics System Survey in Ethiopia.....</b>	<b>81</b>

## TABLES

Table 1: Initial universe and original sample distribution by facility type.....	4
Table 2: Actual sample distribution by facility type and by region.....	4
Table 3: Bin card use and up datedness for priority indicator pharmaceuticals .....	15
Table 4: Bin card accuracy and near accuracy for priority indicator pharmaceuticals.....	17
Table 5: Bin card accuracy and near accuracy in 2018 and 2015 IPLS survey results.....	18
Table 6: vaccine ledger/register use and up datedness for Penta –Inj.....	19
Table 7: Vaccine ledger/register accuracy and near accuracy for Penta –Inj.....	20
Table 8: Types of logistics reports .....	20
Table 9: IFRR Schedule adherence by DUs.....	22
Table 10 near accuracy RRF and HPMRR data quality for priority indicator pharmaceuticals.....	28
Table 11: Percent of health facilities meeting individual storage criteria by facility type.....	36
Table 12: Primary immediate sources of supply.....	41
Table 13: Pharmaceuticals availability on the day of survey .....	46
Table 14: availability of Tracer items, time of visit Electronic) and paper base sites .....	47
Table 15: Average availability on the day of the survey in 2018 and 2015 .....	48
Table 16: Percent of Health facilities stocked out at least once within the 6 months preceding the survey .....	50
Table 17: Frequency of stock outs within the 6 months preceding the survey.....	51
Table 18: Duration of stock out in the 6 months prior to the survey (days) .....	51
Table 19: Percent of facilities, understocked, optimally stocked and overstocked, by facility type.....	52
Table 20: Months of stock by HCMIS and paper-based facilities .....	53
Table 21: Perceived Order Fill Rate by a program, and facility level .....	58
Table 22: Tracer products and Abbreviated names.....	65
Table 23: Use of bin card by item and facility type.....	66
Table 24: Facilities where bin cards are updated by product and facility type .....	66
Table 25: Bin card use electronic Vs paper based .....	67
Table 26: Facilities with bin card accuracy by product and facility type .....	67
Table 27: Near bin card accuracy for all tracer products by facility types.....	68
Table 28: IFRR use in at least one and eighty percent of DUs by all facility type .....	69
Table 29: IFRR Schedule adherence by DUs by all facility types.....	69
Table 30: RRF completeness by program for all health facilities.....	69
Table 31: RRF data quality for all tracer products by all facility type .....	69
Table 32: Storage condition fulfillment comparison between 2018 and 2015 surveys .....	70
Table 33: Storage Condition Fulfillment for Health center.....	70
Table 34: Storage Condition Fulfillment for Health post .....	71



Table 35: Health facilities that had stock on hand of pharmaceuticals available on the day of the survey by health facility level (for 37 Pharmaceuticals).....	72
Table 36: Health facilities with any stock out within the 6 months preceding the survey.....	73
Table 37: Health facilities with 1-2 times stock out within the 6 months preceding the survey .....	74
Table 38: Duration of stock out within the 6 months preceding the survey .....	75
Table 39: Month of stock by health facility type .....	76
Table 40: Month of stock by HCMIS and paper based health facilities .....	79
Table 41: Frequency of emergency order .....	80
Table 42: Wastage.....	80
Table 43: EPSA share from total supply by value.....	80

## FIGURES

Figure 1: Sample distribution from a commodity management perspective.....	3
Figure 2: Distribution of sampled health facilities by level (%) .....	7
Figure 3: Health facilities by electronic (Dagu) and paper-based/manual .....	8
Figure 4: Health facilities with direct EPSA delivery modality .....	8
Figure 5: National level infrastructure availability.....	9
Figure 6: Facilities without access to electricity, internet, and mobile phone .....	10
Figure 7: IPLS SOP availability .....	11
Figure 8: Availability of health post job aids/flip books.....	11
Figure 9: Blank bin card availability .....	12
Figure 10: Blank bin card availability in 2018 and 2015 IPLS survey results.....	13
Figure 11: Bin card in use for at least one tracer product .....	13
Figure 12: Average use of bin cards for all tracer products assessed.....	14
Figure 13: Bin card use Dagu vs. paper based .....	16
Figure 14: Up-to-datedness of bin cards Dagu vs. paper based .....	16
Figure 15: Blank vaccine ledger/register availability .....	18
Figure 16: vaccine ledger/register use.....	19
Figure 17: IFRR use in at least one and eighty percent of DUs .....	21
Figure 18: IFRR Schedule posted in at least one DU .....	22
Figure 19: Facilities with a regular resupply schedule posted in 2018 and 2015 IPLS survey results .....	23
Figure 20: Blank RRF/HPMRR availability .....	23
Figure 21: Percent of facilities using RRF.....	24
Figure 22: RRF use HCMIS vs. paper-based facilities .....	24
Figure 23: HPMRR availability and use at health posts .....	25
Figure 24: Number of RRF reports submitted in the 3 review/reporting periods preceding the survey .....	25
Figure 25: RRF good reporting HCMIS vs. paper based.....	26

Figure 26: Good HPMRR reporting practice .....	26
Figure 27: Facilities having a recent complete RRF in the three reviews/reporting period preceding the survey.....	27
Figure 28: Facilities having a recent complete HPMRR in the three reviews/reporting period preceding the survey.....	28
Figure 29: Blank VRF availability .....	29
Figure 30: VRF use .....	29
Figure 31: Facilities having a recent complete VRF in the three reviews/reporting period preceding the survey.....	30
Figure 32: Near accuracy VRF data quality for the priority indicator pharmaceutical Penta –Inj ..	30
Figure 33: Number of health professionals assigned to the pharmacy units of health facilities...	31
Figure 34: Pharmacy professionals assigned to the pharmacy units of health facilities .....	32
Figure 35: Facilities having non-pharmacy professionals in pharmacy units .....	32
Figure 36: Health facilities having at least one IPLS trained pharmacy unit staff .....	33
Figure 37: Health facilities with at least 80% of pharmacy unit staff trained in IPLS.....	33
Figure 38: Hospitals and health centers having staff trained in IPLS with different modalities.....	34
Figure 39: Health posts having staff trained in IPLS with different modalities.....	34
Figure 40: Storage condition fulfillment .....	35
Figure 41: Percent of health facilities meeting at least 80% of common storage conditions, 2015 and 2018 .....	37
Figure 42: Percent of health facilities with any refrigerator and with a functional refrigerator for vaccine management.....	38
Figure 43: Percentage of facilities with different source of energy for functional refrigerators .....	38
Figure 44: Availability of temperature recording device .....	39
Figure 45: Percent Functional refrigerators found to be within the desired temperature range.....	40
Figure 46: Percentage of facilities with temperature recording chart .....	40
Figure 47: Percentage of facilities with updated temperature recording chart.....	41
Figure 48: Pharmaceutical transportation modality.....	42
Figure 49: Facilities that picked up pharmaceutical by type .....	43
Figure 50: Means of transportation most commonly used by health facility type .....	43
Figure 51: EPSA delivery accompanied by pharmacy professional.....	44
Figure 52: Percent of health facilities that have received logistics related supervisory visits over time ...	45
Figure 53: Average availability of pharmaceuticals in 2018 and 2015 .....	49
Figure 54: Percent of facilities placing emergency orders over previous six months, by type of facility...	54
Figure 55: Means of placing an emergency order .....	55
Figure 56: Wastage .....	56
Figure 57: Inventory turnover at health facilities .....	56
Figure 58: EPSA share in total supply.....	57
Figure 59: Order Fill Rate for selected products, at health centers and hospitals .....	59
Figure 60: Percent on time delivery for the most recent period before the survey, hospitals and health centers .....	60

## ACRONYMS

AMC	Average Monthly Consumption
ART	Antiretroviral Therapy
DU	Dispensing Unit
EPSA	Ethiopian Pharmaceutical Supply Agency
FEFO	First-to-Expire, First Out
FMoH	Federal Minister of Health
FP	Family Planning
HCMIS	Health Commodity Management Information System
HEW	Health Extension Worker
HPMRR	Health Post Monthly Report and Request
IFRR	Internal Facility Report and Request
IPLS	Integrated Pharmaceuticals Logistics System
LMIS	Logistics Management Information System
MCH	Maternal and Child Health
OPD	Outpatient Department
ORS	Oral Rehydration Salt
PFSA	Pharmaceutical Fund and Supply Agency
PLMP	Pharmaceutical Logistics Master Plan
RDF	Revolving Drug Fund
RHB	Regional Health Bureau
RHZE	Rifampicin/Isoniazid/Pyrazinamide/Ethambutol
RRF	Report and Requisition Form
SCMS	Supply Chain Management Systems
SOP	Standard Operating Procedures
TB	Tuberculosis
USAID	United States Agency for International Development
VRF	Vaccine Request Form

## Foreword

Since its establishment in 2007, Ethiopian Pharmaceutical Supply Agency (EPSA) formerly known as 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 medications with appropriate quality, safety, and efficacy. To achieve these goals, EPSA— supported by its partners— has designed and implemented various innovative programs. The Integrated Pharmaceutical Logistics System (IPLS) is one of the major interventions undertaken to create a strong and unified healthcare supply chain, to connect all levels of the supply chain, and to provide accurate and timely data for decision making.

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, all public health hospitals and health centers are able to implement IPLS.

The survey results show 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.



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## Acknowledgement

EPSA acknowledges with gratitude the financial and technical support from the JSI, AIDSFree project that made this work a reality.

Thanks also go to SART Consult, 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 EPSA staffs, PSM-Chemonics Staffs, Regional Health Bureaus, Zonal Health Departments, and health facilities for facilitating the overall data collection processes.



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## EXECUTIVE SUMMARY

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 and related supplies for all Ethiopians. In recent years, significant progress has been made; however, various challenges remain including an inadequate supply of quality and affordable essential pharmaceuticals, poor storage conditions, and weak stock management which have resulted in high levels of waste and stock-outs.

In order to alleviate the challenges indicated above, PFSA (recently renamed as EPSA), in partnership with its partners developed and began implementing the IPLS in 2009. With the introduction of IPLS, EPSA established an integrated health commodity supply chain which accommodates all health program commodities; the system also tries to ensure that all levels – from health facilities to EPSA’s central stores – are connected with accurate and timely data for decision making.

Routine monitoring reports and a country-wide survey conducted in 2014 show IPLS is improving information recording and reporting, storage and distribution systems, as well as the availability of essential commodities at health facilities while also observing identified areas that need to be improved. One of the strong recommendations of the survey was the need for more monitoring and evaluation of IPLS including comprehensive quantitative surveys.

This survey was conducted from April to June 2018 to specifically assess pharmaceutical management practices and performance in IPLS at paper-based and electronic sites. The report is organized in four sections: section I presents introduction and objective, section II deals with survey methodology, section III deals with findings and discussion, and the last section (section IV) presents conclusion and recommendations. The survey tool was adapted from the 2014 IPLS survey which was adopted from the USAID | DELIVER PROJECT’s Logistics Indicator Assessment Tool (LIAT). Data collection took place from April to June 2018 from 456 randomly selected public health facilities. The data collection was conducted using smartphones after scripting the survey tool on SurveyToGo platform. SPSS version 21 and Microsoft Excel were used to manage the data. The analysis was based on descriptive statistics, frequencies, percentages, cross tabulation, and averages. The results were disaggregated by health facility type (hospitals, health centers, and health posts). Hospital results were further disaggregated by level (primary, general and tertiary). The results for the EPSA priority hospitals were also presented. A summary of the key findings, conclusions, and selected recommendations are presented below.

## Key Findings

Only 59% of health posts had blank bin cards (an increase from 40% in 2015). Use of bin cards was even lower – the average use of bin cards for tracer items was 90% at hospitals, 55% at health centres and only 27% at health posts.

For almost every IPLS indicator, unsurprisingly, performance at health post level is poorer than at higher levels. For example, the use of bin cards is only 27% at health posts versus 55% at health centres; between 68% and 81% of bin cards at health centres were up-to-date, while for health posts the range was 55% to 65%; while bin card accuracy was in the range 42%-79% for health centres but only 33-56% for health posts.

Availability and use of stock keeping tools for vaccines is, generally speaking, lower than for IPLS commodities: for example, only 69% of health centres and hospitals had a VR, of those only 58% were using it (defined as an entry over the past six months), and of those using it only 63% were up-to-date and only 14% of VLs were accurate (41% had accurate or near accurate). VRFs for reporting and ordering vaccines were only available in 39% of health centres and of those only 34% were actually using them; the corresponding figures for the RRF were 85% and 83% respectively.

There are still shortages of pharmacy professionals working in the health sector. Despite major efforts to train more pharmacy professionals (both pharmacists and pharmacy technicians), 15% of health facilities (all of the health centres) had no pharmacy professionals on their staff. While significant investments have been made in training on IPLS and commodity management (in service, pre-service and recently online training), for a variety of reasons (service expansion, staff turnover) gaps remain. Nearly 24% of hospitals and health centres had no IPLS trained staff on their pharmacy units with in-service training remaining the most common training modality (96%). At health posts, less than 10% of HEWs reported receiving informal OJT IPLS training, while 1% reported receiving pre-service training.

While sampling and methodological changes make it difficult for a valid comparison between the 2015 and 2018 surveys, the trends are concerning: while the percent of hospitals with acceptable storage conditions (meet 80% of criteria) increased from 43% to 71%, the percent of health centers declined from 63% to 45%; while the percent of health posts remained essentially unchanged from 29% to 27%.

In relation to Cold chain, only 65% of health centres had a functional refrigerator (97% had a refrigerator so nearly 1/3 health centres had a non-functioning refrigerator). Given that all health centres dispense vaccines, and many health posts rely on the cold chain at their associated health centre (only 18% of health posts had a functional refrigerator. The rest pick up and return vaccines to their health centre.

The health centres and hospitals surveyed showed just under half received direct delivery of program items (the exception is ART commodities since ART is typically offered in larger facilities, 96% of facilities offering ART have these delivered). For all other programs, just over half must go to their Woredas to collect medication.

More than half (54%) of health posts reported “on foot” as their main source of transport for health commodities. Another 16% cited public transport, and 4% animals, but less than 1% used bicycles.

Overall availability of most tracer items declined from the last survey (16 of 19 items). The decline was driven by a drop in availability at health centres – at hospitals, availability of most items actually improved. The availability at health facility level was about 79%. Availability of tracer items was, in almost every case, lower at health posts than at health centres.

The majority of health centres were overstocked for 10 of 13 items and hospitals for 9 of 12. Automation seemed to have some impact here with 16% of items at automated sites stocked optimally versus only 9% of items at site managed using paper systems.

While inventory turnover seemed to improve over the three years of data examined (from 1 to 1.6 for RDF items, and 1.5 to 2.3 for program items), in all cases it remains less than optimal.

Wastage rate of Revolving Drug Fund (RDF) products was lower than program products for facilities. Generally, the wastage rate for both program and RDF pharmaceuticals was higher than 2% over the three years period.

## **Conclusions and Recommendations**

*While the availability of IPLS forms for all levels has improved since 2015, challenges remain particularly at health post level. If bin cards—the fundamental record keeping tool under IPLS—are not being used, then IPLS has a long way to go to become a national system.*

Particular focus is needed for stock management at health posts. For almost every IPLS indicator, unsurprisingly, performance at health post level is poorer than at higher levels. Availability of tracer items was, in almost every case, lower at health posts than at health centres. Most of the



attention on strengthening the supply chain continues to focus on higher levels and there is little investment in the last mile supply chain.

*At health facilities, vaccines are managed separately from other items and, in general, inventory management is much weaker for vaccines than for IPLS items.* Availability and use of stock keeping tools for vaccines is, generally speaking, lower than for IPLS commodities. A factor here may be that while IPLS formats are regularly printed centrally and distributed by EPSA, this normally does not happen for vaccine forms (VRFs were printed centrally and distributed in 2018 for the very first time). Facilities are expected to print forms when they need them resulting in a lack of standardization as the forms become modified or are simply not used. Another factor that should be looked at is form design. The VRF is complex, with many fields, and much harder to complete than the RRF. An interesting question would be if the amount of data required in the VRF actually means facilities are less likely to submit it?

There are still shortages of pharmacy professionals working in the health sector. Despite major efforts to train more pharmacy professionals (both pharmacists and pharmacy technicians), 15% of health facilities (all of the health centres) had no pharmacy professionals on their staff. This is concerning and deserves more research to identify root causes. Non pharmacy professionals do not receive any pre service training in commodity management, and are not a priority for IST.

*Training gaps in supply chain management remain:* While significant investments have been made in training on IPLS and commodity management (in service, pre-service and recently online training), for a variety of reasons (service expansion, staff turnover) gaps remain. The problem is even more pronounced at health posts. In-service training has been recently institutionalized for new HEW and the expectation is that this percentage will increase with time.

*Storage conditions remain a major challenge for IPLS.* While sampling and methodological changes make it difficult for a valid comparison between the 2015 and 2018 surveys, the trends are concerning: while the percent of hospitals with acceptable storage conditions (meet 80% of criteria) increased from 43% to 71%, the percent of health centers declined from 63% to 45%; while the percent of health posts remained essentially unchanged from 29% to 27%. It does appear storage conditions at hospitals are receiving more attention than at health centers.

*Cold chain conditions are a deep concern:* significant number of health facilities assessed did not have functional refrigerators for vaccine storage at time of visit. Given that all health centers dispense vaccines, and many health posts rely on the cold chain at their associated health center (only 18% of health posts had a functional refrigerator. The rest pick up and return vaccines to their health centre. This suggests the weak link in the cold chain is at the facility level and that maintenance and repairs needs strengthening.

*Direct delivery has not progressed:* Direct delivery of program commodities to facilities was one of the successes of IPLS. Currently, EPSA delivers to “accessible health facilities (those on “major routes” and, for the remainder, to their woreda. The representative sample of health centers and hospitals surveyed showed just under half received direct delivery of program items (the exception is ART commodities since ART is typically offered in larger facilities, 96% of facilities offering ART have these delivered). For all other programs, just over half must go to their Woredas to collect medication. This is inefficient and pulls health staff away from their main role of providing healthcare. EPSA is currently considering increasing direct delivery from bimonthly to monthly delivery – while this will increase efficiency, consideration must be made for expanding direct delivery to more health centers and the resources this will require.

*Health Extension Workers are still walking:* while HEWS do collect supplies during routine visits to health centers, there is a need for more analysis to assess the burden on HEWs having to collect supplies and if there are steps that can be taken to support them.

*Medicine availability is the ultimate indicator of supply chain performance:* availability of 79% for a basket of tracer items is concerning and shows more work is needed to strengthen the supply chain. A well-functioning LMIS capable of providing either live or periodic inventory data would allow for a more reliable estimate of average availability and system performance. Of course, visibility of availability at facilities helps to not just measure performance but also helps directly improve performance. EPSA is working to improve data visibility from health facility level

*Medicine availability is not the only problem:* overstocking is also a problem. This may be partly due to concerns about stock outs leading facilities to order more than they need. Overall this contributes to an inefficient supply chain with resources tied up in slow-moving inventory, risk of expiry, and large storage areas needed to store excessive amounts of product. Automation seemed to have some impact here with 16% of items at automated sites stocked optimally versus only 9% of items at site managed using paper systems. Low inventory turns also point to an inefficient system.

*Inventory turnover seemed to improve over the three years of data examined- in all cases it remains less than optimal :* Such low inventory turnover (an inventory turn of 2 means the location has six months of stock at any moment) point to large dollar amounts tied up in inventory and an inefficient system, likely exacerbated by fear of stock outs in a vicious cycle: levels over-order items because of fears of stock outs resulting in less funding for other items impacting availability and leading to more over-ordering.

*Low order fill rates (less than 50% or most items):* this is another symptom of an inefficient system that further perpetuates the problem. Facilities over order, don't get what they order, and so they keep over-ordering, leading to both stock outs and overstocks.

To fix this problem will require a holistic effort that incorporates increased data visibility, systematic performance monitoring that includes KPIs that go beyond availability to include efficiency related KPIs like inventory turns, and order fill rate. Increased supply chain velocity—the time it takes for products to move through the supply chain from purchase to customers' hands— will lead to a more responsive and efficient system, with fewer resources tied up in inventory. Other strategies EPSA should assess include ways to shorten procurement lead times, shorter distribution cycles (for example moving from the current bimonthly hub to facility distribution to monthly)

## INTRODUCTION

The FMoH has been working to ensure an efficient and high-performing healthcare supply chain that ensures equitable access to affordable medication and related supplies for all Ethiopians. While significant progress has been made, various challenges remain, including an inadequate supply of quality and affordable essential pharmaceuticals, poor storage conditions, and weak stock management, which have resulted in higher than desired levels of waste and stock-outs.

To strengthen the public sector healthcare supply chain, 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), and in 2007, EPSA was established by Proclamation No. 553/2007, based on the PLMP. The agency's mandate is to "avail affordable and quality pharmaceuticals sustainably to all public health facilities" (PSTP, 2015).

In order to effectively and efficiently execute this mandate and alleviate the challenges indicated above, EPSA, in collaboration with its partners, the USAID | DELIVER PROJECT, Supply Chain Management Systems (SCMS), and others, developed and began implementing the IPLS in 2009. With the introduction of IPLS, EPSA established an integrated health commodity supply chain that accommodates all health program commodities; the system also tries to ensure all levels— from health facilities to EPSA's central stores— are connected with accurate and timely data for decision making. IPLS aims to streamline pharmaceuticals reporting and distribution by integrating the supply chain management of all types of pharmaceuticals (medication, medical supplies and equipment, and laboratory chemicals and reagents) for all programs. With three main components, policies and guidelines for LMIS, direct distribution to facilities, and inventory management of pharmaceuticals, IPLS measures progress and performance through a set of indicators for each component. These indicators assist EPSA in tracking supplies at all levels, and adherence on data use and reporting.

Routine monitoring reports and a country-wide survey conducted in 2014 show that IPLS was improving information recording and reporting, storage and distribution systems, as well as the availability of essential commodities at health facilities while also observing identified areas that need to be improved. One of the strong recommendations of the survey was the need for more monitoring and evaluation of IPLS including comprehensive and quantitative surveys in the future. The latest survey was conducted from April to May 2018. The report is organized in four sections: section I presents introduction and objective, section II deals with survey methodology, section III deals with findings and discussion, and the last section (section IV) presents a conclusion and recommendations.

## OBJECTIVES

The general objective of the survey was to provide information on the status of IPLS implementation and measure its performance at public sector health facilities.

The specific objectives of the survey include:

- To assess the availability of infrastructure, human resource, formats, tools and other enabling factors that are necessary for proper implementation of IPLS;
- To assess select inventory and logistics system management practices, including the use of recording and reporting formats, inventory management, distribution and supervision;
- To collect stock status information, including stock availability, stock-out duration, stock on hand, product expiration, and storage conditions;
- To assess logistics system performance, through indicators like order fill rate and wastage rate;
- To identify key issues and challenges in IPLS implementation to help determine the next steps needed for logistics system improvements; and
- To provide data for comparative analysis of select key indicators since the 2014 survey.

## METHODOLOGY

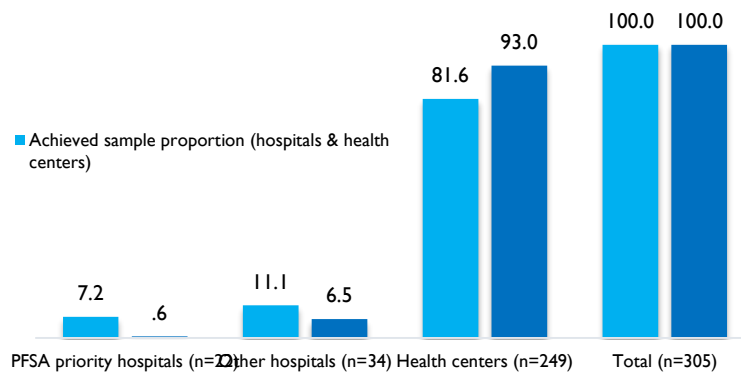
### Study Population

The population of interest for this study was public sector service delivery points which included tertiary hospitals, general hospitals, primary hospitals, health centers, and health posts. Of the total hospitals in the sample, 22 were *EPSA priority hospitals*<sup>1</sup>, these are hospitals that receive special attention from EPSA due to their location, size, and importance.

Hospitals and health centers were considered a single population during sample calculation while health posts were treated as a separate population. As can be seen in Figure 1, health centers were under-represented in the final sample making up 81.6%, while it should have had a proportion of 93.0%. On the other hand, hospitals were over-represented, 7.2% and 11.1% for EPSA priority hospitals and the other hospitals respectively, against 0.6% and 6.5% actual distribution. Due to such disproportionate representation and to reduce bias, data weights were applied during analysis. The national level estimations refer to hospitals and health centers unless and otherwise stated.

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<sup>1</sup> Adama Tertiary Hospital, ALERT Center, Amanuel Mental Specialized Hospital, Assela Teaching and Referral Hospital, Ayder Comprehensive Specialized Hospital, Dagmawi Menelik Referral Hospital, Dilla University Referral Hospital, Felege Hiwot Comprehensive Specialized Hospital, Gandhi Memorial Hospital, Gondar University Specialized Hospital, Hawassa University Comprehensive Specialized Hospital, Hiwot Fana Specialized University Hospital, Jimma University Specialized Hospital, Rasdesta Damtew Memorial Hospital, St. Paul's Hospital Millennium Medical College, St. Peter Specialized Hospital, Tikur Anbessa Specialized Hospital, Tirunesh Beijing General Hospital, Wolayta Sodo University Referral Hospital, Yekatit 12 Hospital Medical College, Yirgalem General Hospital, and Zewditu Memorial Hospital.



**Figure 1: Sample distribution from a commodity management perspective**

### Sample size determination

The sample calculation was based on the following formula<sup>2</sup> which considered a single population for health facilities (hospitals and health centers). The main sample size was determined using expected proportions of study variables, margin of error, confidence level, and response rate.

$$n = \frac{Z^2 p(1-p)}{d^2}$$

Where:

$n$  = sample size

$p$  = population proportion (e.g. availability of essential medicines<sup>3</sup>)

$Z$  = associated  $Z$  value with the confidence level (90% confidence<sup>4</sup> = 1.645)

$d$  = margin of error<sup>5</sup> (allowable error in the estimate or desired precision, e.g.  $\pm 0.05$  that is  $\pm 5\%$ )

Response rate ( $RR$ ) = 95%

Since the total number of the health facilities was known, applying Finite Population Correction (FPC), and considering a 95% response rate, the sample size became 266. The 266 samples were further stratified by health facility type and level per the natural proportion (see column four in Table 1). However, the sample for the EPSA priority hospitals (1.5) and the other hospitals (17.3) were too small to generate indicative results by facility type or level; hence, these were boosted to 22 and 34 respectively.

<sup>2</sup> Bhandarkar, P. L. & Wilkinson, T.S (1999). *Methodology and Techniques of Social Research*. Delhi: Himalaya Publishing House.

<sup>3</sup> Mostly, a conservative estimate of 50 percent (0.50) is considered as it warrants the largest sample size.

<sup>4</sup> Also called confidence coefficient, confidence level represents the likelihood that the confidence interval is to contain the true value.

<sup>5</sup> Also referred as confidence interval, in statistics, a confidence interval is a particular kind of interval estimate of the true value of a population. Instead of estimating the true value by a single value, an interval likely to include the true value is given, e.g.  $40 \pm 5\%$ .

**Table 1: Initial universe and original sample distribution by facility type**

Facility types	Universe	Proportion (%)	Original sample by proportion
EPSA priority hospitals	22	0.57%	1.5
Other hospitals	252	6.50%	17.3
Health centers	3616	92.93%	247.3
Total	3890	100.00%	266.0

Table 2 below, when it came to actual sample implementation, the total sample size became 305 (i.e., 22 EPSA priority hospitals, 34 hospitals, and 249 health centers). In addition, a total of 151 health posts (around 60.6% of the already sampled health centers) were selected as the total number of facilities planned in the scope were 456. The sample was further broken down proportionally by region. The health posts were treated separately as different sampling units during selection and analysis.

**Table 2: Actual sample distribution by facility type and by region**

Regions	EPSA priority hospitals	Other hospitals	Health centers	Total	Health posts	Total (including health posts)
Oromia	3	10	96	109	57	166
SNNPR	4	6	47	57	29	86
Amhara	2	7	58	67	35	102
Somali	-	2	12	14	7	21
Tigray	1	4	15	20	9	29
Afar	-	1	6	7	4	11
Ben-Gum	-	1	3	4	2	6
Gambella	-	1	2	3	2	5
Addis Ababa	11	-	8	19	4	23
Harari	1	1	1	3	1	4
Dire Dawa	-	1	1	2	1	3
Total	22	34	249	305	151	456

## Sample Selection Procedures

**EPSA priority hospitals, other hospitals, and health centers:** All the available 22 EPSA priority hospitals were selected (i.e. census). The other hospitals and health centers were selected applying systematic random sampling technique which is a probability sampling approach that better ensures geographic representation. It was done for each region by calculating the sampling

interval using the list of all available health facilities (i.e. sample frame) and the designated sample size for that particular region. Before applying the selection, the sample frame was sorted by zones followed by woreda.

**Health posts:** The sample for health posts accounted for 60.6% of the health centers sampled (i.e. 151 of 249). Since health posts are linked to health centers, the first step in selecting health posts required to randomly select the health centers using systematic sampling from the already selected 249 health centers. As a result, 151 health centers were selected from which health posts were selected. In each of the 151 selected health centers, all health posts served were listed and one was selected randomly using a random numbers table.

### **Survey tool**

The survey tool was adapted from the 2014 IPLS survey which was adopted from the USAID | DELIVER PROJECT's LIAT tool. The 2014 tool was further refined and improved including adding questions to cover additional objectives. Feedback from data collectors training and pre-test were also utilized to further refine and improve the tool. The ordering of sections and questions was also revised to ensure better administration of the survey.

### **Data collection**

Ten teams were set up to undertake the data collection. Each team comprised of a supervisor and two interviewers. All interviewers were pharmacy professionals as the research requires an in-depth understanding of the pharmaceutical logistics system. Prior experience in data collection was also considered in recruiting the interviewers.

All supervisors and interviewers were trained in Addis Ababa from March 28 to April 1, 2018. The major topics covered during the three-day training included: IPLS, objectives of the research, methodology (population, sample, and location), survey tool and administration procedure, ethical standards and quality assurance procedures. The session on the survey tool included dummy interviews using a scripted version of the survey tool on smartphones. The training was followed by a one-day pre-test. The pre-test was carried out in health facilities that were not part of the actual sample. The pre-test facilities were selected from Addis Ababa (Kirkos sub-city), Amhara (Chacha), and Oromia (Bishoftu, Fitcha, Woliso, and Sebeta). The pre-test was done in two general hospitals and four health centers. A debrief session was held following the pre-test. The session helped revise the survey tool and its script as well as set out practical survey administration procedures.

Data collection took place from April 19 to June 4, 2018. JSI and EPSA staff joined the field teams to monitor adherence to quality standards and extend assistance when challenges occurred.

### **Data management**

The data collection was conducted using smartphones. The survey tool was scripted on the Survey ToGo platform. The scripted survey tool was tested rigorously prior to the fieldwork. Whenever there was internet connectivity, completed surveys were uploaded to a server. SPSS version 21 and Microsoft Excel were used to manage the data. The data was checked for logical consistency and accuracy.

The analysis was based on descriptive statistics: frequencies, percentages, cross tabulation, and averages. The results were disaggregated by health facility type (hospitals, health centers, and



health posts). Hospital results were further disaggregated by level (tertiary, general, and primary). The results for the EPSA priority hospitals were also presented.

### **Quality assurance**

In order to ensure high-quality output, different quality assurance measures were put in place including:

- All interviewers were pharmacy professionals; they were familiar with the pharmaceutical sector and the IPLS. This had significance in ensuring the survey tool and its administrative procedures were well understood and implemented.
- The survey tool utilized lessons learned from the 2014 IPLS survey to improve it. Training and pre-test feedback were also utilized to refine it further.
- The field team (supervisors and interviewers) were trained on the research and its methodology. They did dummy as well as actual pre-test interviews before embarking on the fieldwork.
- The data was collected using the SurveyToGo platform which entails automatic skip patterns and range checks.
- The GPS coordinates of the surveyed health facilities were captured automatically during the survey. Moreover, pictures of health facilities, their pharmacy stores, and cold chains were collected.
- While fieldwork was in progress, reports on key indicators were generated on a weekly basis. Insights from the progress report helped guide the data cleaning and validation as well as analysis considerations.
- The final data was checked for logical consistency and accuracy. Preliminary results were communicated with stakeholder and their inputs were utilized in preparing the final results.

### **Ethical considerations**

Prior to the commencement of the fieldwork, regional health bureaus and the management of sampled health facilities were informed about the research. Respondents were briefed on the purpose, scope, and outputs of the research. They were informed that personal identifiers would never be used in any form while reporting, presenting and communicating the findings of the research and that data for individual health facilities would not be reported. Informed consent was obtained from respondents before interviewing them.

### **Limitations**

- The health post sample size is small compared to the total health posts in the country and therefore the results for health posts are not statistically significant.
- While the comparison with the 2014 survey was important, a number of indicator definitions changed to be more comprehensive.

## Survey Findings and Discussion

### Facility description

#### Health facilities by level

A total of 456 facilities representing all the regions and the two city administrations were surveyed. The majority, 54.6%, were health centers. Health posts and hospitals (tertiary, general, and primary) accounted for 33.1% and 12.2% of the sample respectively. Figure 2 illustrates the distribution of surveyed health facilities by level.

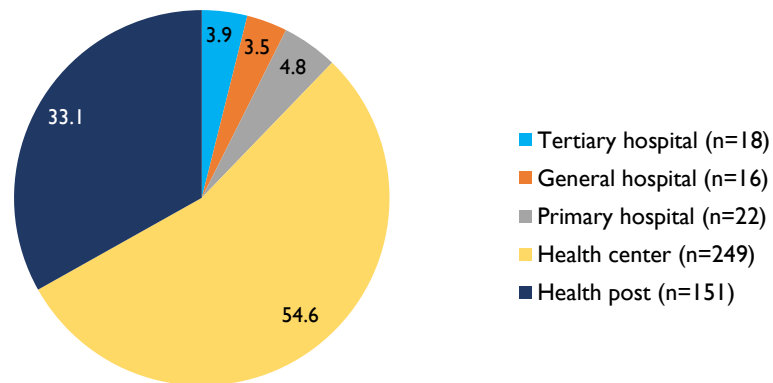


Figure 2: Distribution of sampled health facilities by level (%)

#### HCMIS FE (Dagu) implementation

Dagu (formerly known as HCMIS FE) is an inventory management system designed to manage daily transactions at health facilities. This system facilitates the use of standard operating logistics procedures including issue and receipts, 'first to expire, first out', and batch/expiry tracking. It also helps store and generates timely stock reports for decision making.

Ethiopia has been scaling up the implementation of Dagu at hospitals and health centers. The implementation status of Dagu (HCMIS FE) was assessed at hospitals and health centers. About 22% of sampled facilities reported implementing the system. More than 93% of tertiary and general hospitals and close to two-thirds of primary hospitals (63.3%) were implementing Dagu (HCMIS FE) compared to just 18.5% of health centers. Figure 3 details the comparison of Dagu (HCMIS FE) and paper-based/manual health facilities by level.

### HCMS (Dagu) implementation

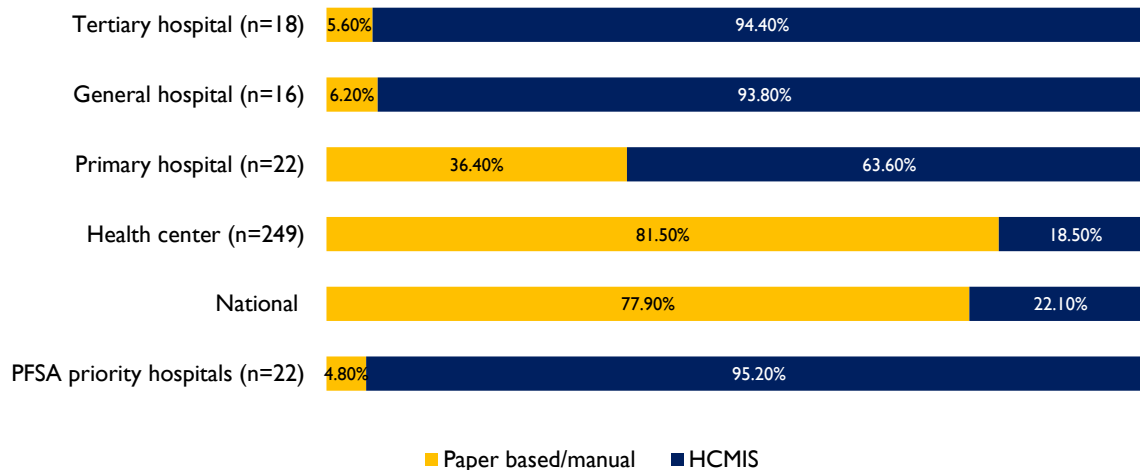


Figure 3: Health facilities by electronic (Dagu) and paper-based/manual

### EPSA delivery modality

The survey examined the modality of health products delivery from higher levels to lower levels. EPSA typically delivers products directly to health facilities every two months, or for hard to reach facilities it delivers to the woreda (district) with facilities picking up or woreda then delivering. One of the objectives and responsibilities of EPSA is to scale up the direct delivery of health products to all health facilities. All of the tertiary, general and EPSA priority hospitals and 95.5% of primary hospitals reported getting program products directly from EPSA and among health centers, direct EPSA delivery stood at 47.8%.

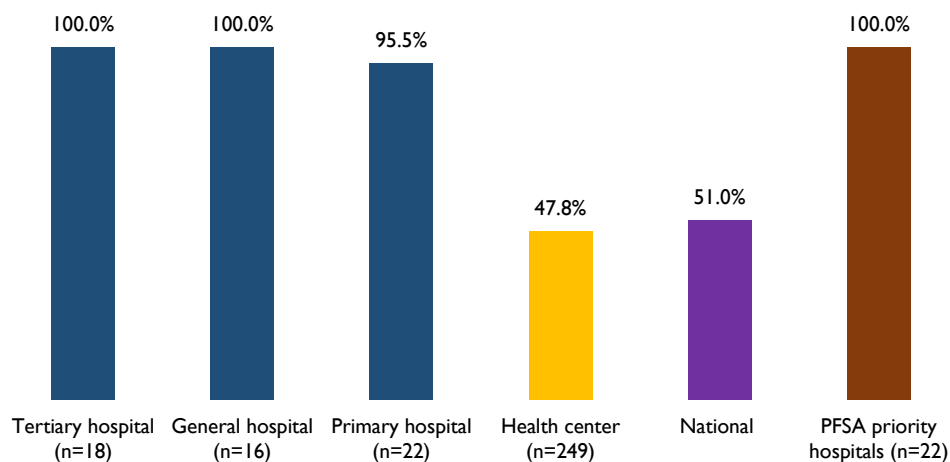


Figure 4: Health facilities with direct EPSA delivery modality

## Infrastructure availability

Availability of infrastructure, namely (1) paved road<sup>6</sup>, (2) electricity, (3) water supply, (4) mobile/landline phone, (5) computer, (6) internet, and (7) backup generator was assessed to determine adequacy of existing infrastructure for effective pharmaceutical management and implementation of IPLS. This assessment, except for the availability of paved roads, was done at two levels: health facility in general and at the medical store(s). Internet and backup generator were reported as the two least available resources at the facility level with only 35.5% and 35.1% of hospitals and health centers reporting access. At medical stores, computer availability and water supply were the least available infrastructure with only 25.2% and 22.7% of hospitals and health centers reporting access, respectively.

It is worth noting the large differences between the two levels, health facility and medical store, for access to computers, water supply and backup generator. In all these cases access by the medical store was much less than that of the health facility in general, i.e. even though the resources were available for the health facility in general, they were not available at the medical store. Figure 5 has the details on the availability of infrastructure at health facilities and medical stores.

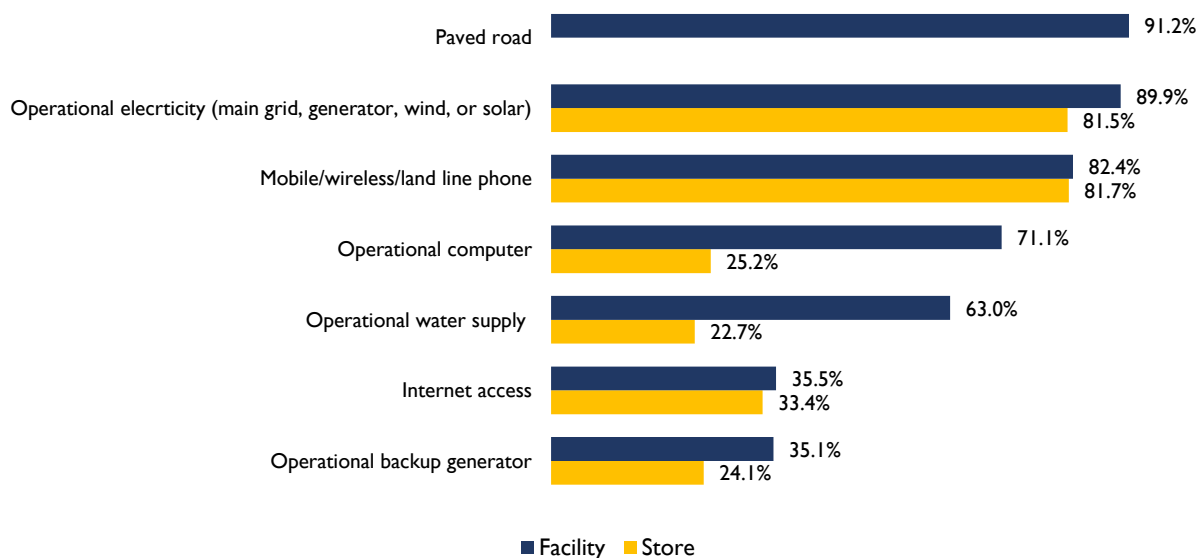


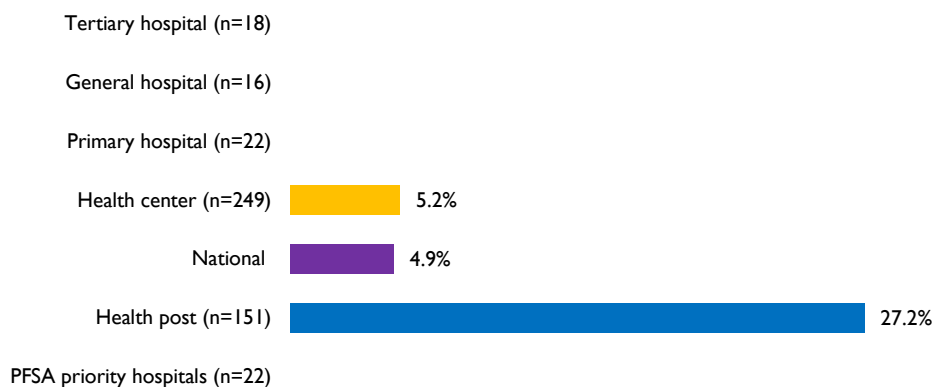
Figure 5: National level infrastructure availability

## Facilities without operational electricity, internet, and mobile/wireless/landline phone access

Electricity, internet and mobile/wireless/landline phone services could be critical determinants for implementation of IPLS. Only 4.9% of hospitals and health centers at the national level had no

<sup>6</sup> Only asked at facility level (not asked for pharmacy store).

access to none of the three infrastructures (electricity, internet, and phone services). Access of health posts to the same three infrastructures is relatively low, though, with 27.2% of them not having access. Figure 6 illustrates the proportions of health facilities without access to the three infrastructure by health facility level.



**Figure 6: Facilities without access to electricity, internet, and mobile phone**

### Logistics System Management Practices

As part of IPLS LMIS, various standardized recording and reporting formats are used at different levels of the healthcare supply chain. Availability and usage of these standard forms and tools are critical supply chain indicators. At the facility level, bin cards, Internal Facility Report and Resupply Form (IFRR), Health Post Monthly Report and Resupply Form (HPMRR,) and Report and Requisition Form (RRF) record commodity transactions and report quantities for resupply. In addition to these forms, SOP and health post job aids (for health posts) were developed to guide professionals in managing their inventory and use these forms. EPSA, supported by partners, has printed and distributed these forms and reference documents to health facilities. This survey assessed availability, use, currentness and accuracy of these tools.

### Availability of SOPs and health post job aids

SOPs and health post job aids are essential documents that serve as a reference for the proper implementation of IPLS. The survey assessed the availability of at least one IPLS SOP at hospitals and health centers and IPLS job aids at health posts. As presented in Figure 7, availability of IPLS SOP was highest at tertiary level (83.3%); falling as the level of facility decreases. At health centers, availability was only 47.4%.

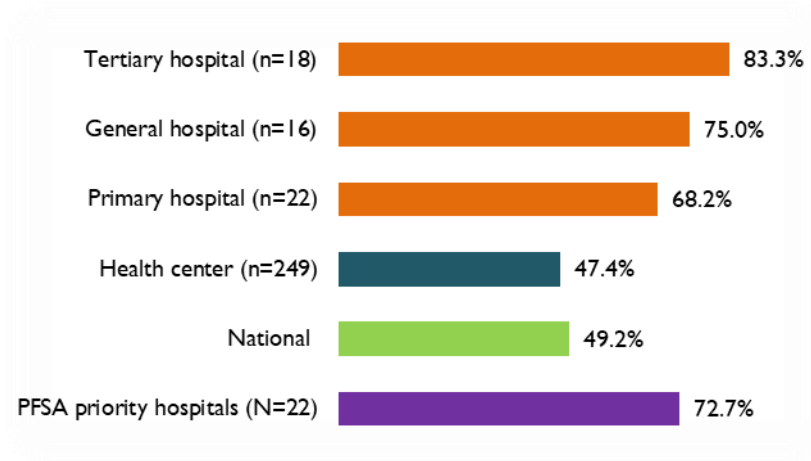


Figure 7: IPLS SOP availability

As presented in Figure 8, health post job aids were available in less than one-third of the facilities surveyed (31.1%).



Figure 8: Availability of health post job aids/flip books

### Logistics Data Recording Practices

Logistics data recording and reporting are a foundation of 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 decision-making on resupply quantities, forecasting, and procurement.

## Bin card

### Availability and utilization of bin cards

Consistent and accurate use of bin cards is essential for inventory management. Availability and utilization of bin cards were assessed for select essential pharmaceuticals. Availability of bin cards was defined as the presence of a blank bin card (manual or electronic) for future use (space for at least one future transaction). The blank formats could be manual or electronic. Availability of blank bin cards was found to be very high at hospitals: 100% of the hospitals (tertiary, general and primary) had an electronic and/or paper format bin cards for future use on the day of the visit. Meanwhile, 83.9% of the health centers had bin cards for future use on the day of the visit. Availability was significantly lower at health posts, only 58.9%. Nationally (excluding health posts), availability of bin cards was 84.9%.

Figure 9 below shows the details on findings related to the availability of blank bin cards disaggregated by different levels and types of health facilities.

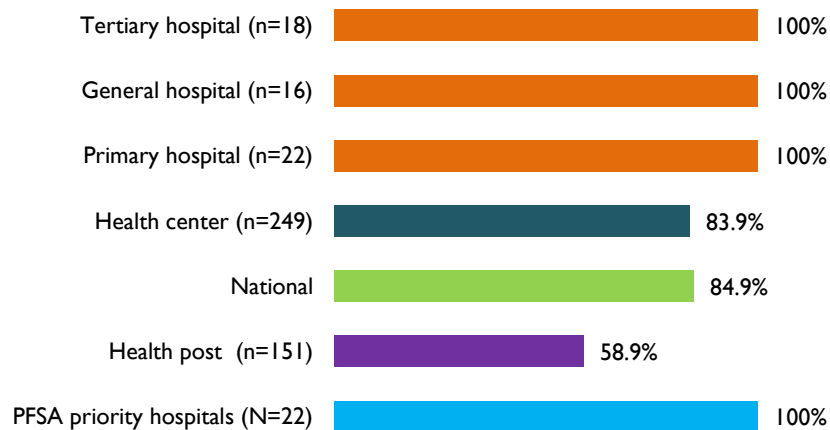


Figure 9: Blank bin card availability

Comparison of availability of blank bin cards from the 2018 and 2015 surveys (Figure 10) shows some improvements at all levels, particularly at health post level (an increase from 40 percent to nearly 59 percent) albeit with room for further improvement.

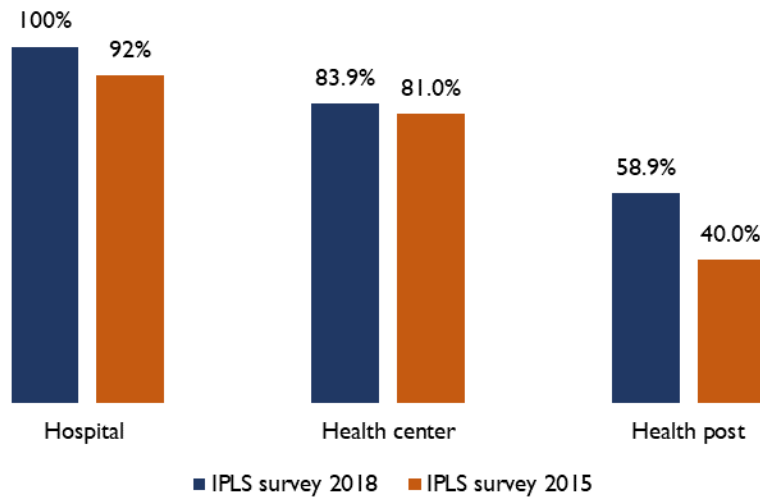


Figure 10: Blank bin card availability in 2018 and 2015 IPLS survey results

In addition to availability, consistent and accurate use of bin cards is essential for inventory management. The findings regarding the use of bin cards, defined as having at least one transaction recorded within 6 months preceding the date of the survey had a similar trend to blank bin card availability: it declined as the level of facility lowers. As presented in Figure 11, 100% of the tertiary and general hospitals, 95.5% of the primary hospitals, 81.9% of health centers and 43% of health posts were using bin cards for recording transactions.

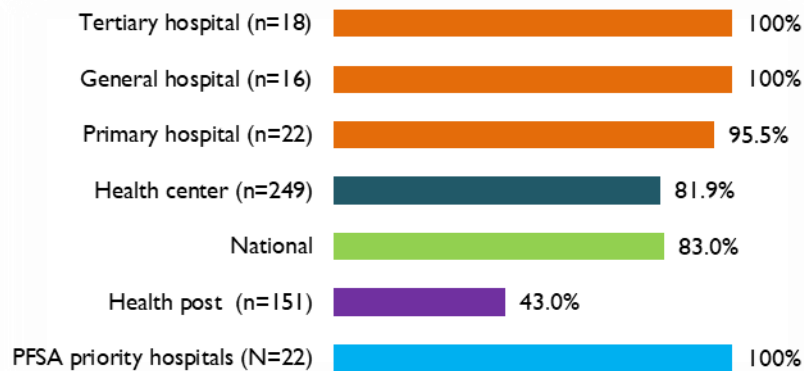
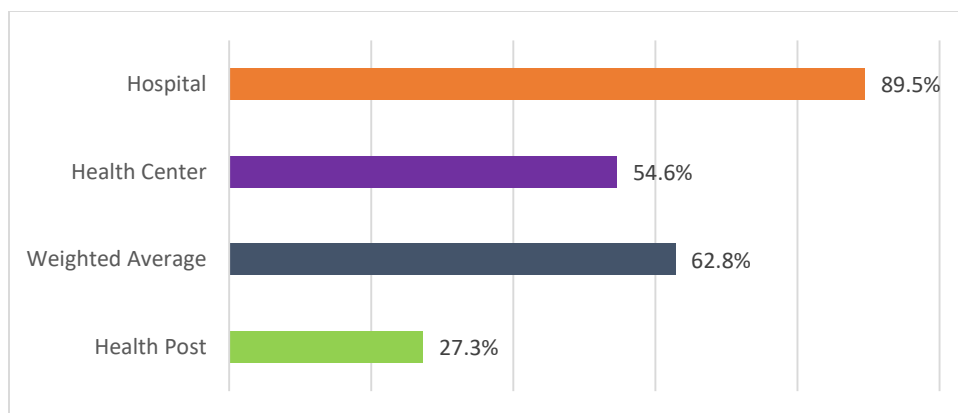


Figure 11: Bin card in use for at least one tracer product

Use of bin cards was also assessed for selected pharmaceuticals. The use of bin cards for priority indicator pharmaceuticals was higher in hospitals than in health centers. As shown in Figure 12, considering all tracer products assessed, the average use of bin cards was 27.3% at health posts, 54.6% at health centers, and 89.5% at hospitals.





**Figure 12: Average use of bin cards for all tracer products assessed**

This assessment showed on average 62.8% of health facilities were using bin card. MNCH LIAT, 2018 assessment conducted at 100 facilities indicated lower bincard utilization (51%)<sup>7</sup>.

#### **Facilities with updated Bin Cards**

To consider bin cards up-to-date, in-use bin cards had to be updated within the previous 30 days. In addition, if the bin card was last updated with a balance of 0 and the facility has not received any product since the date of that entry, it is also considered updated. The percentage of facilities with an updated bin card is calculated only for facilities that used bin cards for the products assessed.

As shown in

Table 3: Bin card use and up datedness for priority indicator pharmaceuticals, the use of bin cards for priority indicator pharmaceuticals was higher in hospitals with a percentage as high as 96.4% for Amoxicillin - 250mg/500mg Tab. However, use was inconsistent by level and product types with a percentage as low as 23.2% for Malaria Rapid Diagnostic Test (mRDT) at health-posts<sup>8</sup>. Again, similar to availability and use, the higher the level of facility the more current the bin card. For priority indicator pharmaceuticals, the highest percentage of up-to-dateness by facility type were for Cotrimoxazole-480mg/960mg -Tab at hospitals (90%), mRDT at health centers (81.1%) and Implanon at health posts (64.7%). On the other hand, the lowest up-to-datedness by facility type was observed for Implanon at hospitals (71.7%), for Cotrimoxazole -480mg/960mg –Tab at health centers (67.6%) and Amoxicilline-125mg/250mg-Tab or Amoxicilline-125 mg/5ml – Suspension at health posts (54.8%).

<sup>7</sup> Woinshet & et al, 2018. Maternal, new born & child health logistics system assessment, Ethiopia. Arlington VA: AIDSFree project & EPSA.

<sup>8</sup> Results showing use and updated bin cards for all the tracer products assessed are annexed.

**Table 3: Bin card use and up datedness for priority indicator pharmaceuticals**

Pharmaceuticals	Hospital		Health center		Health post		Weighted average: Facilities	
	Use	Updated	Use	Updated	Use	Updated	Use	Updated
<b>Amox - 250mg/500mg -Tab</b>	96.4%	87.0%	78.4%	75.8%	-	-	82.3%	75.6%
<b>Alu (any presentation)-Tab</b>	88.7%	89.4%	55.5%	73.0%	30.8%	57.6%	59.3%	75.3%
<b>Ceft-0.5gm/1gm- inj</b>	94.6%	81.1%	71.2%	71.1%	-	-	75.9%	70.4%
<b>Cotri -480mg/960mg -Tab</b>	89.3%	90.0%	61.6%	67.6%	-	-	70.3%	73.2%
<b>Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp</b>	92.3%	77.8%	53.9%	71.0%	30.7%	54.8%	55.2%	68.8%
<b>ORS-Sachet</b>	77.3%	76.5%	56.8%	68.4%	27.5%	59.0%	45.7%	59.7%
<b>RHZE/RH -Kit</b>	90.7%	83.7%	55.9%	74.8%	-	-	66.7%	76.1%
<b>Medroxyprogesterone - Injection</b>	85.5%	74.5%	53.2%	72.8%	34.3%	61.2%	55.9%	68.0%
<b>Implanon</b>	85.2%	71.7%	50.4%	70.3%	26.2%	64.7%	55.6%	67.7%
<b>AZT/3TC/NVP - 60/30/50mg -Tab</b>	88.2%	80.0%	64.7%	77.3%	-	-	82.6%	69.0%
<b>TDF/3TC/EFV - 300/150/600mg - Tab</b>	92.6%	82.0%	63.0%	77.3%	-	-	77.8%	78.8%
<b>NVP- 10mg/ml-Susp</b>	87.5%	81.6%	54.8%	77.9%	-	-	71.8%	74.5%
<b>Malaria RDT</b>	-	-	46.8%	81.1%	23.2%	61.5%	41.7%	77.7%

Both utilization and up-to-datedness of bin cards were compared between electronic sites (Dagu) and paper-based facilities. In both indicators, electronic sites (Dagu) facilities performed better than paper-based facilities. As shown in Figure 13, all electronic hospitals and 87% of health centers utilized bin cards compared to 90% hospitals and 80.8% health centers for paper-based facilities.

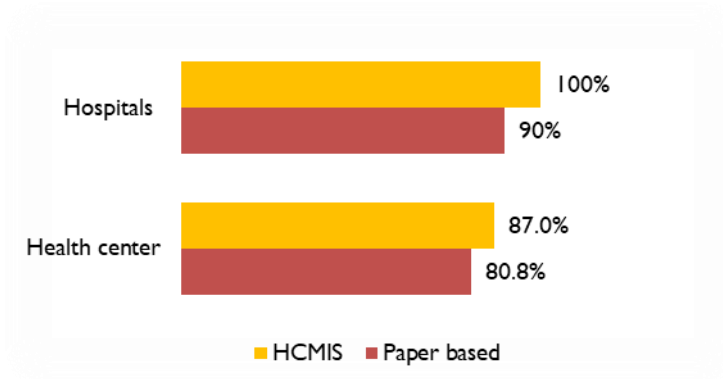


Figure 13: Bin card use Dagu vs. paper based

As shown in Figure 14, comparing the weighted average up-to-datedness of bin cards for all tracer products assessed, electronic (Dagu) facilities are better than paper-based facilities in having updated bin cards. Automated facilities (hospitals and health centers) had a weighted average of 80.1% up-to-datedness of bin cards compared to 67.7% of paper-based facilities.

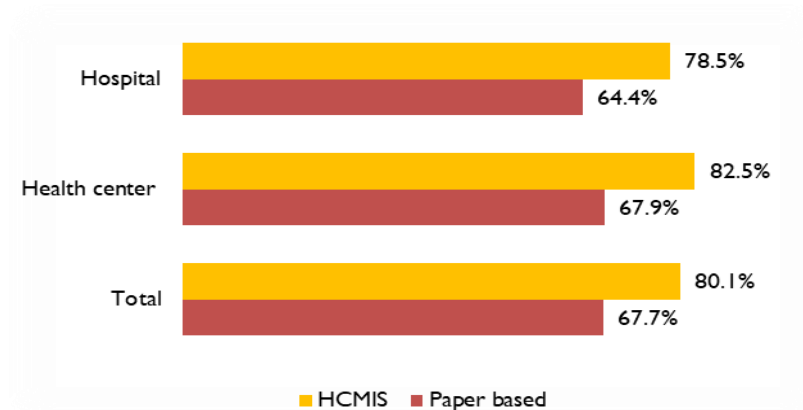


Figure 14: Up-to-datedness of bin cards Dagu vs. paper based

### Accuracy of balances on bin cards

The survey, in addition to checking the use and up-to-datedness of bin cards, also assessed the quality of data by cross-checking the latest bin card balance with the physical count on the day of the visit for each of the selected products. The comparison was done at two levels of accuracy: a bin card with the same record of latest balance as the physical count is considered accurate; a less than 10 percent discrepancy between the bin card and the physical count is considered near

to accurate. The percentages are calculated only for facilities that utilized bin cards and managed the specific products<sup>9</sup>.

As shown in Table 4, differences were observed in accuracy by facility level. At hospitals, accuracy of bin card balances ranged from 44% (TDF/3TC/EFV - 300/150/600mg –Tab) to 73.5% (NVP- 10mg/ml-Suspension). At health centers, the highest accuracy was 79.4% for NVP- 10mg/ml-Suspension and the lowest was 42.4% for Medroxyprogesterone – Injection. At health posts, the highest accuracy was 55.9% for Implanon and the lowest was 32.7% for Medroxyprogesterone – Injection.

Considering all the tracer products of the survey, the weighted average accuracy of bin cards for hospitals, health centers and health posts were 49%, 59.4% and 45.3%, respectively<sup>10</sup>. For near accuracy, on average (weighted), 61.5% of hospitals, 65.2% of health centers and 53.3% of health posts had bin cards within 10 percent accuracy<sup>11</sup>.

**Table 4: Bin card accuracy and near accuracy for priority indicator pharmaceuticals**

Product	Hospital		Health center		Health post		Weighted average: Health facilities	
	Accurate	Near accurate	Accurate	Near accurate	Accurate	Near accurate	Accurate	Near accurate
Amox - 250mg/500mg - Tab	61.10%	70.40%	51.60%	62.10%	-	-	50.60%	62.00%
Alu(any presentation)- Tab	48.90%	48.90%	45.10%	49.20%	42.40%	51.50%	43.10%	47.20%
Ceft-0.5gm/1gm- inj	58.50%	73.60%	56.60%	66.90%	-	-	53.70%	66.40%
Cotri -480mg/960mg - Tab	64.00%	66.00%	53.10%	58.70%	-	-	52.90%	58.30%
Amox- 125mg/250mg- Tab or Amox-125 mg/5ml - Susp	58.30%	72.20%	48.40%	54.80%	35.70%	47.60%	49.50%	59.60%
ORS-Sachet	58.80%	70.60%	44.40%	55.60%	33.30%	53.80%	37.20%	49.00%
RHZE/RH -Kit	61.20%	67.30%	67.20%	70.30%	-	-	61.40%	66.20%
Medroxy - Injection	61.70%	74.50%	42.40%	55.20%	32.70%	42.90%	45.40%	56.80%
Implanon	56.50%	73.90%	50.00%	53.40%	55.90%	55.90%	49.80%	61.60%
AZT/3TC/NVP - 60/30/50mg -Tab	44.40%	57.80%	68.20%	72.70%	-	-	55.60%	68.40%
TDF/3TC/EFV - 300/150/600mg -Tab	44.00%	54.00%	60.00%	68.00%	-	-	49.30%	60.20%
NVP- 10mg/ml-Susp	73.50%	75.50%	79.40%	79.40%	-	-	72.40%	74.20%
mRDT	-	-	54.70%	63.20%	34.60%	50.00%	51.80%	60.80%

<sup>9</sup> For ease of calculating accuracies, the values of those products with a 0 bin card balance or 0 physical count on the day of the visit were converted to 1.

<sup>10</sup> Results showing accuracy of bin cards for all the tracer products assessed are annexed

<sup>11</sup> Results showing near accuracy of bin cards for all the tracer products assessed are annexed

Bin card accuracy and near accuracy for 2018 and 2015 surveys are compared in Table 5. While there was a significant improvement in accuracy at health post level (from 24 to 45 percent, the accuracy level declined at hospitals and health centers, a trend worthy of concern).

**Table 5: Bin card accuracy and near accuracy in 2018 and 2015 IPLS survey results**

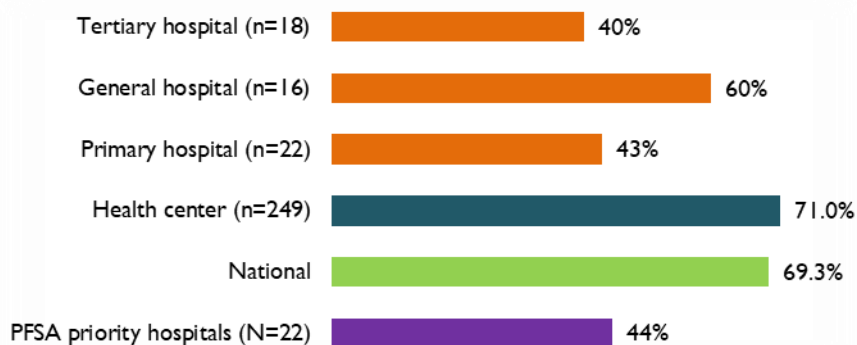
Product	Hospital		Health center		Health post	
	IPLS survey 2018	IPLS survey 2015	IPLS survey 2018	IPLS survey 2015	IPLS survey 2018	IPLS survey 2015
Accurate	49%	63%	59.4%	62%	45.3%	24%
Near accurate (+/-10%)	61.5%	73%	65.2%	64%	53.3%	63%

### Vaccine Ledger/Register

Service Delivery Points (SDPs) use the vaccine ledger to record vaccine transactions. The data captured on vaccine ledgers (VLs) are then combined to complete the Vaccine Request Form (VRFs), which are used for crucial decision-making on resupply quantities.

#### Availability and utilization of vaccine ledger/register

Availability of VL (defined as the availability of at least one blank row for one transaction) was very low across all facility types. Even though health centers had better availability (71%) than hospitals and health posts. VL was nonexistent in almost all health posts surveyed (an exception being one health post) and only less than 50% of hospitals had vaccine ledger/register available<sup>12</sup>. Figure 15 below shows availability of blank vaccine ledger/register disaggregated by levels and types of health facilities.



**Figure 15: Blank vaccine ledger/register availability**

As presented in Figure 16, use of vaccine ledger/register, which was defined as having at least one transaction recorded within 6 months preceding the date of the survey, was very low in all facility types.

<sup>12</sup> Health posts are excluded from the analysis as its implementation was only limited to a single facility.

Only 59.3% of the health centers were using the VL, use was lower for hospitals, at less than 50% and nearly none of the health posts.

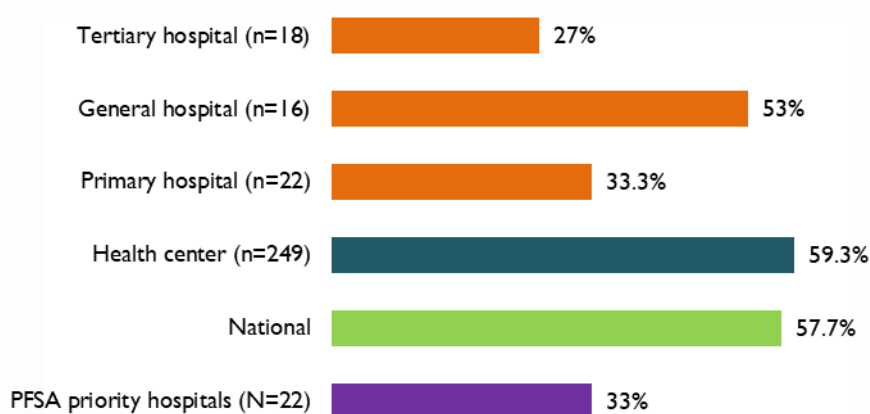


Figure 16: vaccine ledger/register use

### Facilities with updated Vaccine Ledger

Similar to bin cards, to consider vaccine ledger/register up-to-date, it had to have been updated within the previous 30 days. In addition, if the vaccine ledger/register was last updated with the balance of 0 and the facility had no transaction for that product since the date of that entry, it is also considered updated.

The percentage with updated vaccine ledger/register is calculated only for facilities that utilized vaccine ledger/register for Pentavalent –Inj. Unlike the use of vaccine ledger/register, the higher the level of facility the better the vaccine ledger/register up-to-datedness (see Table 6). Up-to-datedness of vaccine ledgers/registers was 72.2% and 59.4% at hospitals and health centers, respectively.

Table 6: vaccine ledger/register use and up datedness for Penta –Inj

Product	Hospital		Health center		Weighted average	
	Use	Updated	Use	Updated	Use	Updated
Penta –Inj	36.7%	72.2%	58.1%	59.4%	55.5%	62.6%

### Facilities with Accurate Balances on vaccine ledger/register

The quality of data on vaccine ledgers/registers was assessed by cross-checking the latest balance on the vaccine ledger/register against the physical count on the day of the visit for Pentavalent – Inj. Here again, the comparison was done at two levels of accuracy. A vaccine ledger/register with the same record of latest balance as the physical count is considered accurate; while having less than a 10 percent discrepancy between the vaccine ledger/register and the physical count is

considered near to accurate. The percentages are calculated only for facilities that had vaccine ledger/register and managed Pentavalent –Inj.

As shown in Table 7, the level of accuracy for vaccine ledger/register was very low across all facilities with a weighted average of 13.6% for accurate and 27.9%, for near accurate respectively.

**Table 7: Vaccine ledger/register accuracy and near accuracy for Penta –Inj**

Product	Hospital		Health center		Weighted average	
	Accurate	Near accurate (+/- 10%)	Accurate	Near accurate (+/- 10%)	Accurate	Near accurate (+/- 10%)
Penta –Inj	11.1%	16.7%	13.3%	28.7%	13.6%	27.9%

### Logistics Reporting Practices

Logistic reports move data up through the supply chain to help in decision making. To facilitate correct and consistent reporting and resupply, IPLS introduced the IFRR, HPMRR, and RRF. Hospitals and health centers use the RRF to report their consumption and to request resupply quantity every two months, while health posts use the HPMRR every month to report their consumption and request resupply from health centers. The health centers can then calculate their resupply quantity. The IFRR is an internal facility report and request form between the facility dispensing units and the main facility store. Table 8 below summarizes the types of logistic reports, their purpose, flow and frequency.

**Table 8: Types of logistics reports**

Name	Acronym	Purpose	From/To	Frequency
Report and Requisition Form	RRF	Report and request	Health centers/hospitals to EPSA hub EPSA hubs to EPSA center	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	Dispensing Units to stores	Varies; usually weekly or biweekly
Vaccine Request Form	VRF	Report and request	Health centers/hospitals to woredas then EPSA hub	Monthly

## Internal Facility Report and Resupply (IFRR)

Using the IFRR and routine, scheduled resupply of DUs by stores is the cornerstone of IPLS. This is because RRFs are based on stores issues (IFRRs) and stock on hand. Also, DUs should be replenished on a schedule to avoid overworking the pharmacy staff.

Figure 17 illustrates the percentage of facilities using IFRR in at least one and in 80% of their DUs. IFRR use in at least one DU was close to 94.6% in hospitals and 64.0% in health centers. When the data were further analyzed to measure use of IFRR in at least 80.0% of the major program DUs, ART, outpatient department (OPD), tuberculosis (TB), family planning (FP), maternal and child health (MNCH) and laboratory, the percentage declines to 78.6% for hospitals and 43.8% for health centers.

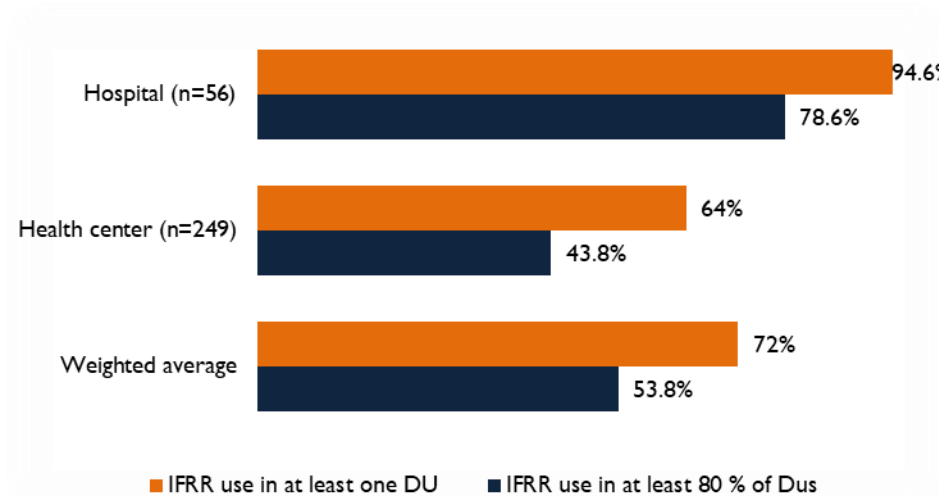
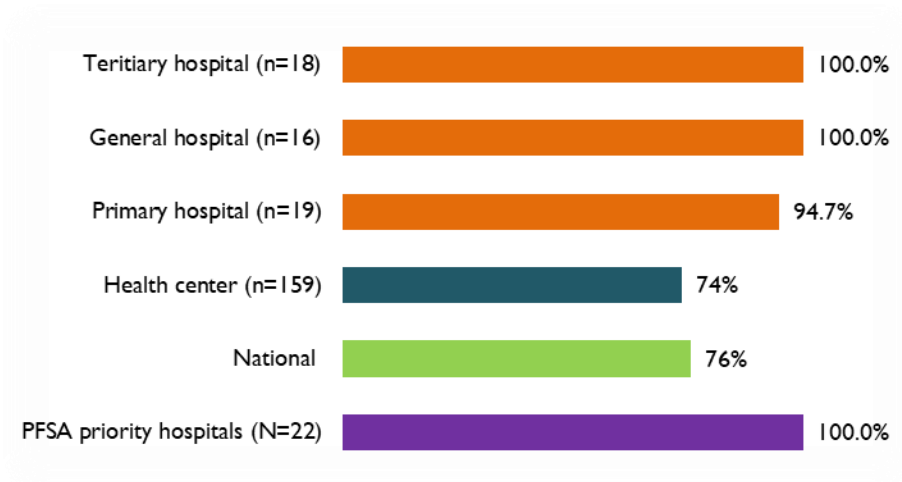


Figure 17: IFRR use in at least one and eighty percent of DUs

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 follow the agreed upon schedule to issue pharmaceuticals. As shown in Figure 18, among facilities that reported using IFRR at least in one DU, nearly all hospitals (98.1%) and about three fourths (74.0%) of health centers had a resupply schedule posted in the main store.





**Figure 18: IFRR Schedule posted in at least one DU**

Adherence to the posted schedule is also an important indicator for proper implementation of IPLS. Adherence to schedule was evaluated by comparing the number of IFRRs reported by the major DUs against the number of reports expected considering their schedule. Percentage of facilities (hospitals and health centers) with at least 80% reporting rate for the five major DUs considering their respective schedule were considered to adhere to the schedule. As shown in Table 9, among those facilities with a posted IFRR schedule, adherence to a schedule is not satisfactory in most of the dispensing units across health facilities.

The highest adherence was found to be in OPD, with 74.5% for hospitals and 50% in health centers and the lowest in TB with 44.4% and 32.4% respectively.

**Table 9: IFRR Schedule adherence by DUs**

	Hospital	Health center
ART	56.3%	43.5%
OPD	74.5%	50%
TB	44.4%	32.4%
FP	50%	40%
MNCH	48.8%	33.6%
LAB	54%	38.2%

Comparison of health facilities having regular resupply schedule posted in 2018 and 2015 surveys is also outlined in Figure 19.

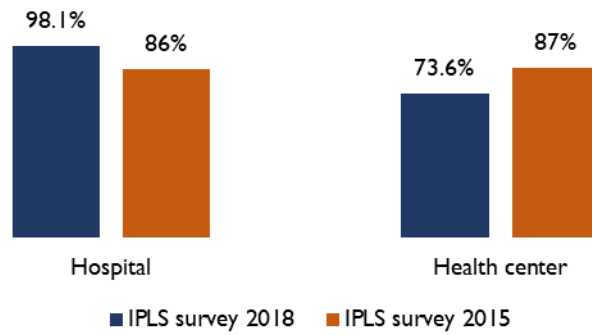


Figure 19: Facilities with a regular resupply schedule posted in 2018 and 2015 IPLS survey results

## RRF and HPMRR

### RRF/HPMRR Availability and Utilization

Reliable recordkeeping and reporting is critical for the IPLS to function well. One of the primary goals of the IPLS is to enable facilities to produce the bimonthly commodity requests (orders) and RRF to EPSA. EPSA uses the information from the RRF to resupply health facilities, and it can also help forecast future demands, and support other evidence-based decisions.

As shown in Figure 20, blank RRFs were available in almost all hospitals (98.2%) and in 85% of health centers at the time of visit to the health facilities.

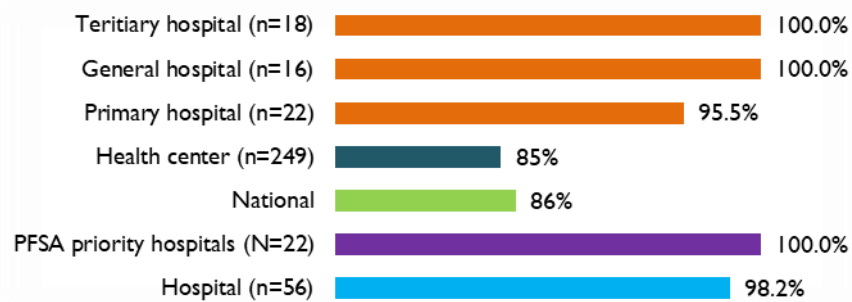
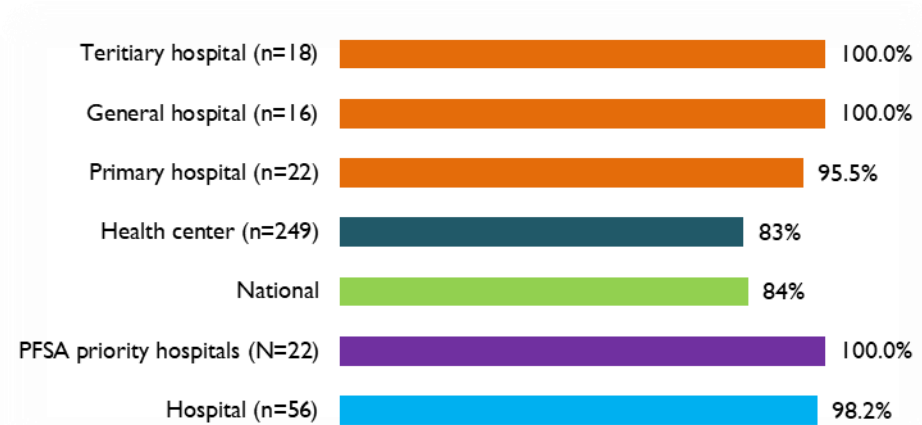


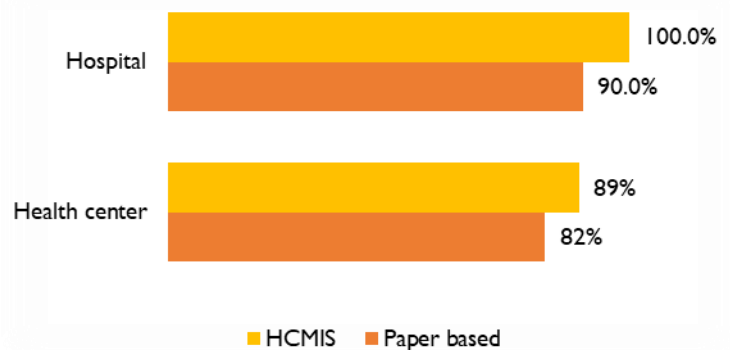
Figure 20: Blank RRF/HPMRR availability

As shown in Figure 21, RRF use, as described by the availability of at least one completed RRF for any of the past three review/reporting periods, had a similar trend to that of blank RRF availability. Nearly all hospitals (98.2%) and 83% of health centers were using RRF.



**Figure 21: Percent of facilities using RRF**

RRF use was further assessed by comparing usage at electronic (Dagu) and paper-based facilities. HCMIS facilities performed better in RRF use compared to paper-based facilities. In hospitals, RRF use was 100% for electronic facilities while it was 90% for paper-based facilities. Similarly, in health centers, 89% of HCMIS facilities use RRF compared to the 82% of paper-based facilities. It should be noted that the proportion of paper-based hospitals from the sample is very low.



**Figure 22: RRF use HCMIS vs. paper-based facilities**

Similarly, HPMRR availability and use were assessed for health posts. As shown in Figure 23, HPMRR was available in less than half (46.4%) of the health posts surveyed and its use is even lower with only about one third (34.4%) of health posts using HPMRR. As HPMRR is the major indicator of IPLS implementation at health posts, this result indicates there is still a long way to go in strengthening IPLS implementation at health posts.

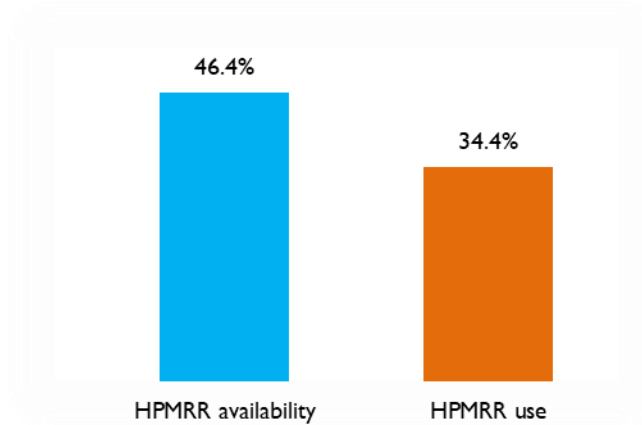


Figure 23: HPMRR availability and use at health posts

### RRF/HPMRR reporting rate and RRF timeliness

Hospitals and health centers are expected to use the RRF to report and place their orders to EPSA consistently. As shown in Figure 24, among the facilities using RRF, close to 90% of hospitals and 78.3% of health centers placed three orders in the three reviews/reporting periods preceding the survey. It is important to note all EPSA priority hospitals had placed all of the expected three orders using RRFs.

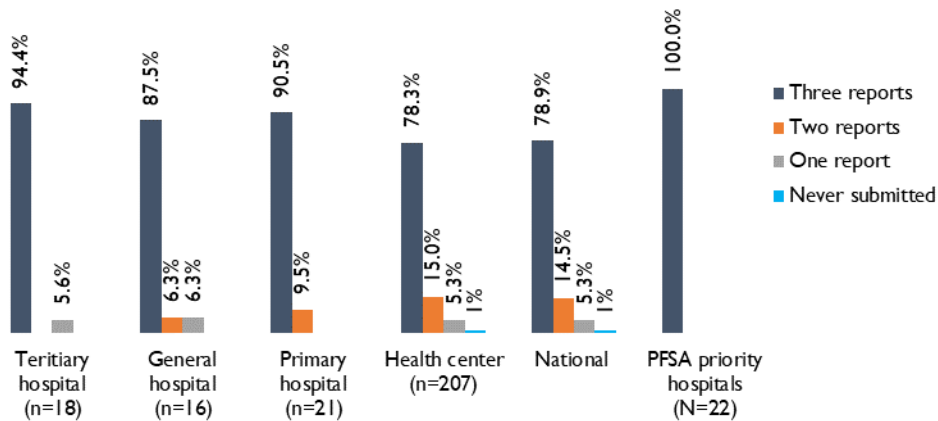


Figure 24: Number of RRF reports submitted in the 3 review/reporting periods preceding the survey

Facilities that placed two or three orders in the three reviews/reporting periods preceding the survey were considered as facilities with good RRF reporting rate, while those that reported only one were considered as facilities with poor RRF reporting rate. With this in mind, the comparison was done between electronic and paper-based facilities on their practice of RRF reporting. As shown in Figure 25, contrary to expectation, paper-based facilities outperformed HCMIS facilities on good RRF reporting. All hospitals using paper had good reporting rate compared to the 95.7%

of hospitals using Dagu. For health centers, 94% of paper-based health centers had good RRF reporting rate compared to 90.2% of health centers using Dagu. However, this result should be taken cautiously as the survey considered RRF reports as placed when verified with a copy of the RRF, which was more difficult to do for HCMIS sites than paper-based facilities. In addition, the sample proportion of paper-based hospitals is very low.

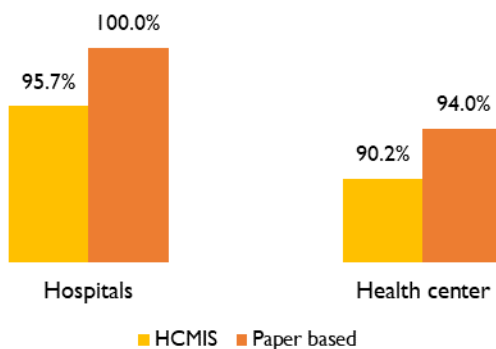


Figure 25: RRF good reporting HCMIS vs. paper based

As shown in Figure 26, good reporting practice by health posts using HPMRR was very low (19.6%).

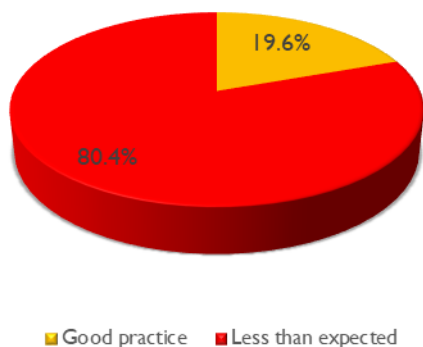


Figure 26: Good HPMRR reporting practice

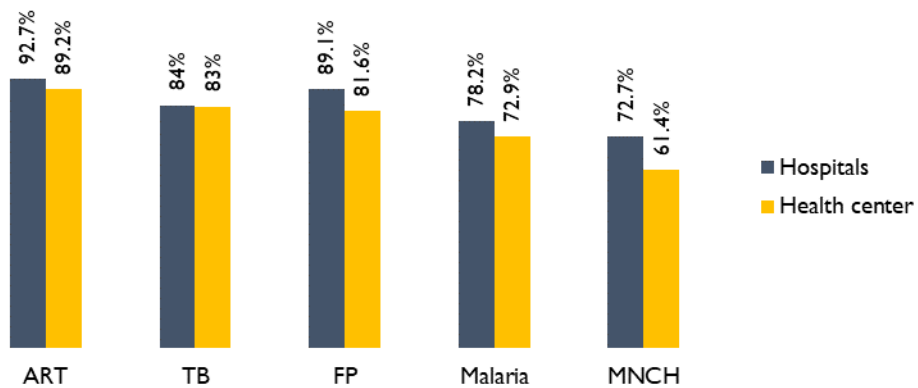
Timeliness of the RRF reports, that is, whether they were completed within 10 days after the reporting period, was also investigated for hospitals and health centers. The majority (89.8%) of good reporting facilities placed at least two RRFs on time. A better performance was observed for hospitals (90.6%) than health centers (68.9%).

### Facilities with Complete and Accurate RRF/HPMRR Reports

The survey, in addition to assessing the reporting rate, also checked the quality of RRF data by assessing its completeness and accuracy. Data from five major programs—HIV, TB, FP, malaria and MNCH— in the most recent RRF were checked for completeness and accuracy. A report was

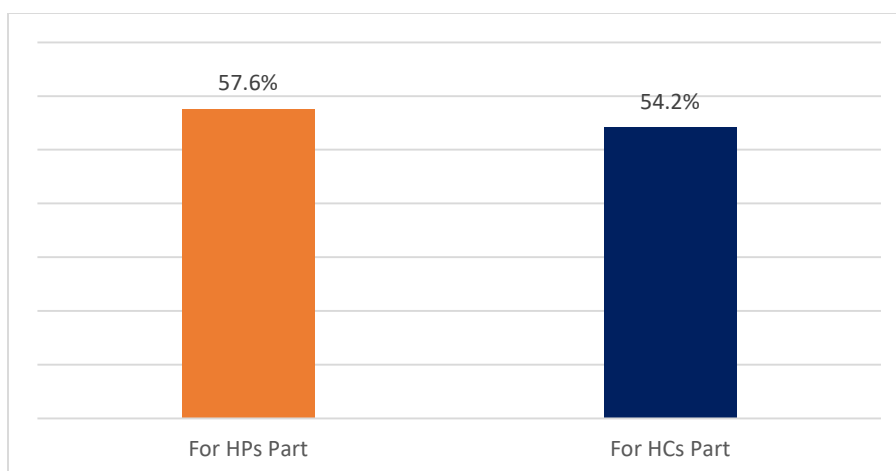
considered complete if all the columns were filled in for at least five ART products, three products each for TB, FP, malaria and four products for MNCH.

As shown in Figure 27, regardless of the type of facility, RRF completeness was highest for ART which was 92.7% for hospitals and 89.2% for health centers. The lowest RRF completeness was observed for MNCH both in hospitals (72.7%) and health centers (61.4%). Generally, hospitals have better RRF completeness for all programs compared to health centers. These findings may reflect the degree of integration or the length of time since integration first occurred: ART was the original IPLS program element, family planning and TB were added in 2012, malaria in 2014, and MNCH items were still being added when the survey was carried out.



**Figure 27: Facilities having a recent complete RRF in the three reviews/reporting period preceding the survey**

For health posts, completeness was assessed by reviewing HPMRR reports placed by health posts at health centers. A report was considered complete if all the columns for each product listed in the report are filled in for at least 10 products for parts completed by the health posts and the health center (the health center completes the quantity to be resupplied. As shown in Figure 28, HPMRR completeness was unsatisfactory for parts completed by the health post (57.6%) and health center (54.2%).



**Figure 28: Facilities having a recent complete HPMRR in the three reviews/reporting period preceding the survey**

The data quality of RRF and HPMRR reports was also checked by considering near accuracy, that is, comparing a 10 percent discrepancy between stocks on hand reported in the RRF/HPMRR with the balance recorded on the bin card on the date that the RRF/HPMRR report was completed. Table 10 illustrates the percentage of facilities with quality RRF/HPMRR for priority indicator products. At hospitals, accurate balances ranged from 48.4% (Amoxicillin - 250mg/500mg -Tab) to 74.5% (Medroxyprogesterone - Injection). At health centers, the highest accuracy balance was 73.3% for Nevirapine- 10mg/ml-Suspension and the lowest 27.7% for Amoxicillin - 250mg/500mg -Tab. At health posts, the highest accuracy balance was 70% for Implanon and the lowest 37% for Medroxyprogesterone – Injection.

Considering all the tracer products of the survey, the weighted average accuracy of RRF/HPMRR for hospitals, health centers and health posts were 68.1%, 47.4% and 61.0% respectively<sup>13</sup>.

**Table 10 near accuracy RRF and HPMRR data quality for priority indicator pharmaceuticals**

	Hospital	Health center	Health post	Weighted average
Amoxicillin - 250mg/500mg -Tablet	48.4%	27.7%		39.0%
Artemether Lumafantrine (any presentation)-Tablet	63.0%	53.1%	50.0%	60.4%
Ceftriaxone-0.5gm/1gm- injection	71.9%	33.8%		56.1%
Cotrimoxazole-480mg/960mg -Tab	61.2%	35.4%		52.3%
Amoxicillin-125mg/250mg-Tab or Amoxicillin-125 mg/5ml - Suspension	60.0%	35.8%	68.2%	53.0%
ORS-Sachet	50.0%	37.2%	55.0%	36.0%
RHZE/RH -Kit	71.4%	47.8%		56.4%
Medroxyprogesterone - Injection	74.5%	51.7%	37.0%	59.4%
Implanon	64.4%	42.9%	70.0%	55.7%
AZT/3TC/NVP - 60/30/50mg -Tab	71.1%	57.1%		69.6%
TDF/3TC/EFV - 300/150/600mg -Tab	68.8%	54.3%		60.0%
NVP- 10mg/ml-Suspension	72.3%	73.3%		72.5%
mRDT		42.9%	50.0%	44.3%

<sup>13</sup> Results showing accuracy of RRF/HPMRR for all the tracer products assessed are annexed

## Vaccine Supply Chain: Use of Vaccine Request Form (VRF)

The VRF is used to request vaccines from vaccine supplying hubs.

As shown in Figure 2929, blank VRFs were available in less than 40% of health centers and hospitals (39.3% in hospitals and 39% in health centers) at the time of the visit.

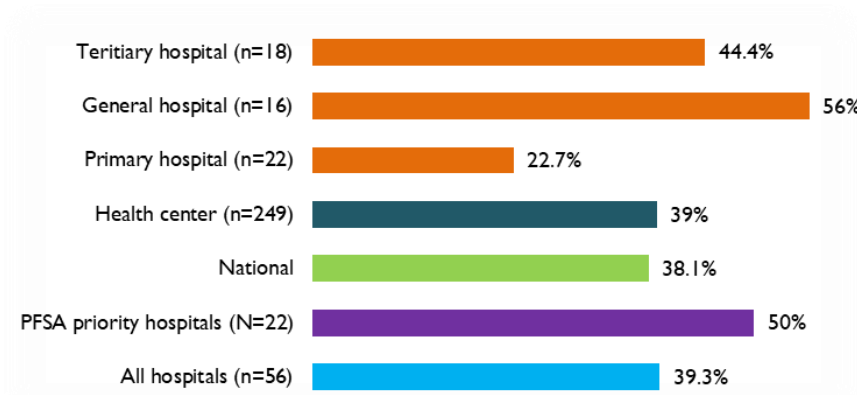


Figure 29: Blank VRF availability

As shown in Figure 3030, slightly more than one-third of the facilities (34.9% health centers and 32.1% hospitals) that had VRFs were using them.

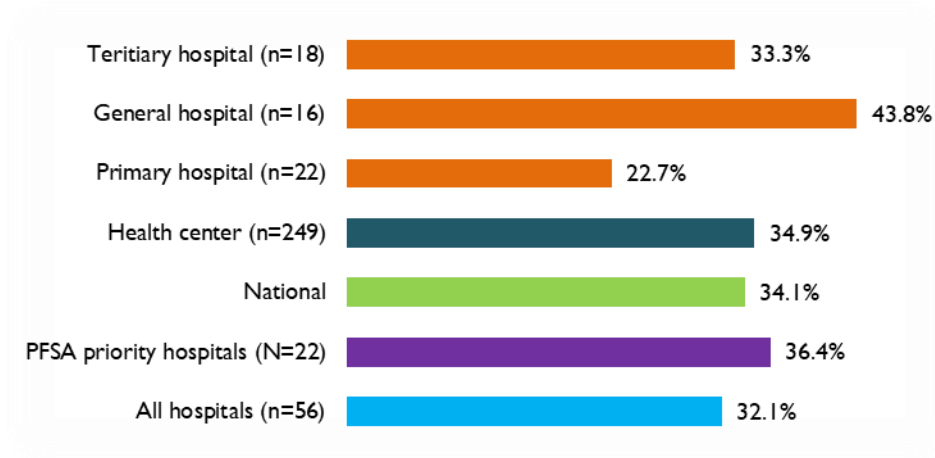


Figure 30: VRF use



### Facilities with Complete and Accurate VRF Reports

The survey assessed the quality of VRF data by assessing its completeness and accuracy for those sites using the form. Data from EPI was used to check the completeness of the most recent VRF report. A report was considered complete if all the columns for each product listed in the report are filled in for at least four products.

As shown in Figure 3131, regardless of the type of facilities, VRF completeness was very low across all facilities. Only 11.1% of hospitals and 20.2% of health centers had a complete VRF.

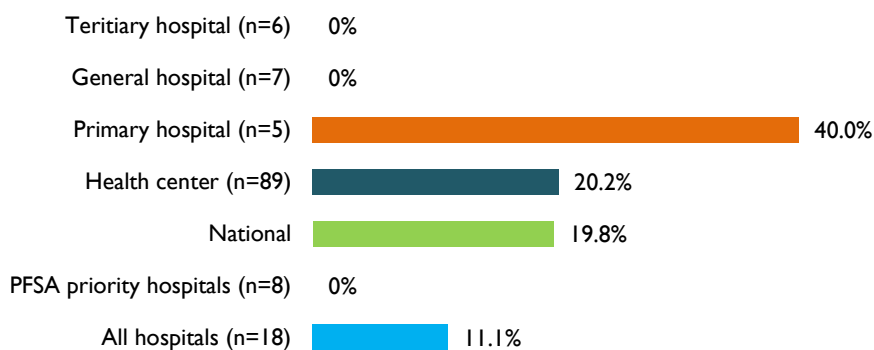


Figure 31: Facilities having a recent complete VRF in the three reviews/reporting period preceding the survey

Data quality of VRF reports was also checked by considering near accuracy, that is, comparing a 10 percent discrepancy between the balances of stock on hand reported in the VRF with the balance on the vaccine ledger/register on the date that the VRF report was completed for Penta –Inj among facilities who used the forms for the product. Figure 3232 illustrates the percentage of facilities with quality VRF. At hospitals, accuracy was 44.4% and at health centers, it was 51.4%. The weighted average accuracy of VRF for all facilities was nearly half (49.6%).

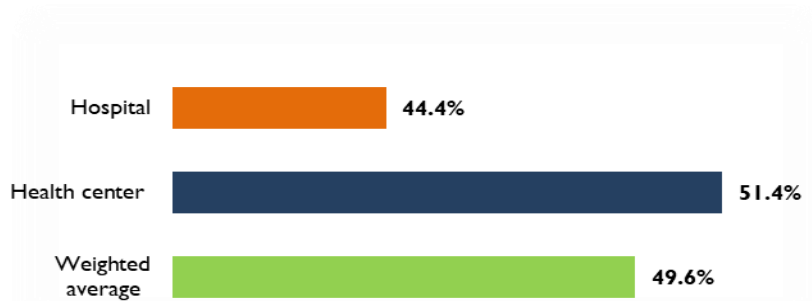


Figure 32: Near accuracy VRF data quality for the priority indicator pharmaceutical Penta –Inj

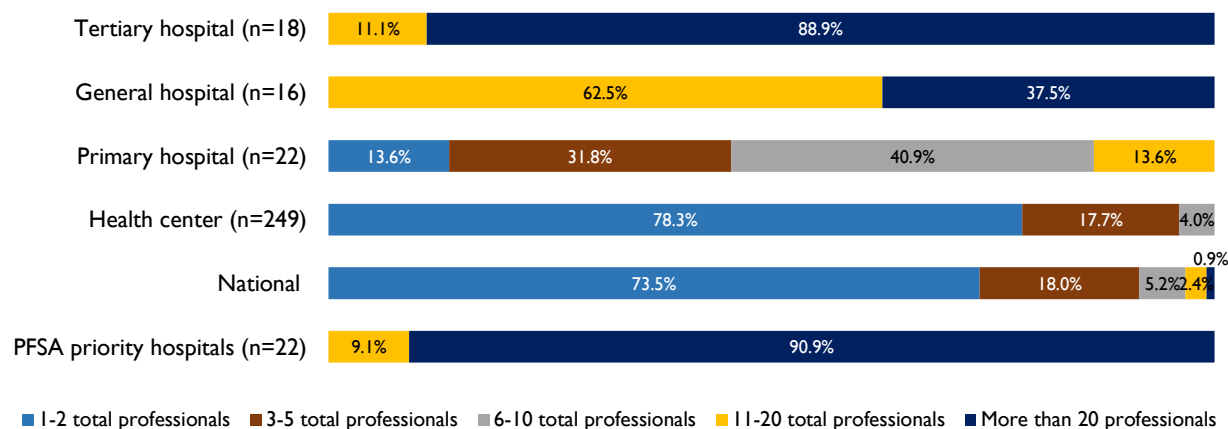
Overall, availability, use of and accuracy of VRFs are lesser than that of RRFs or even HPMRR.

## Human resource and training

Implementation of IPLS requires a well-trained and motivated workforce. Building the capacity of health facility staff has been a major focus of EPSA 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, while recently supply chain training has been institutionalized as part of both HEW and pharmacy technician pre-service training.

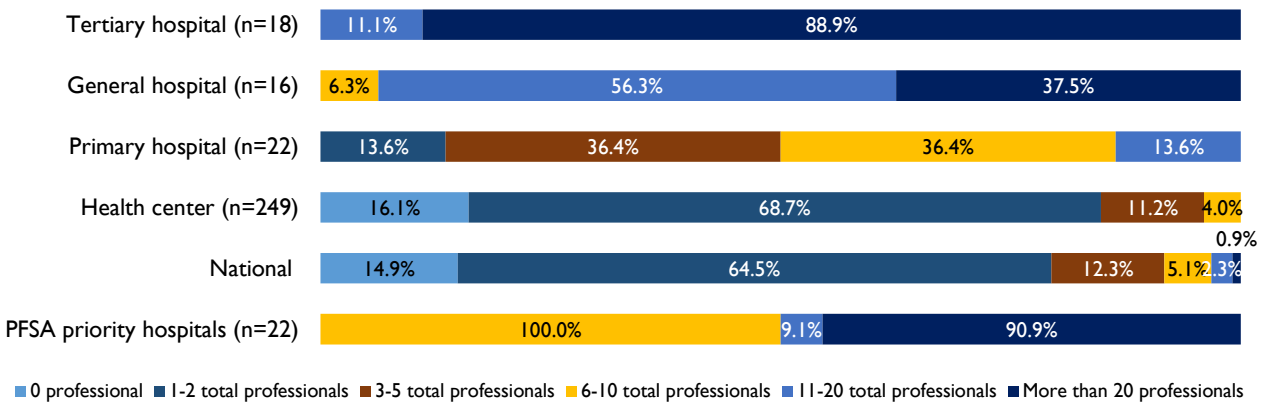
### Professionals in pharmacy units

The number of health professionals working in the pharmacy units of the health facilities, excluding health posts, was assessed. Nationally, 73.5% of hospitals (all general hospitals) and health centers had only 2 or fewer health professionals in their pharmacy units. Only 0.9% of the facilities (all were tertiary and general hospitals) had more than 20 professionals working in their pharmacy units. The majority of health centers (78.3%) had only 1-2 professionals in their pharmacy units. Figure 33 shows the number of professionals in the pharmacy unit of health facilities by level and aggregated for hospitals and health centers.



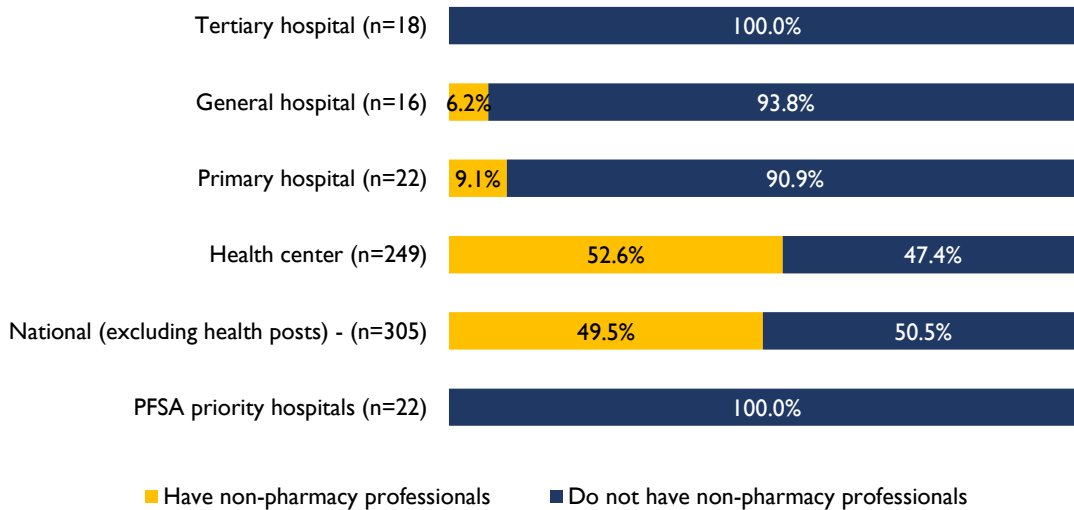
**Figure 33: Number of health professionals assigned to the pharmacy units of health facilities**

A similar pattern was observed regarding the number of pharmacy professionals assigned to the pharmacy units. Nationally, about 15% of all health facilities (all health centers) did not have any pharmacy professionals assigned to their pharmacy unit. Nearly two-thirds of hospitals and health centers (64.5%) had only 1-2 pharmacy professionals working in their pharmacy units. More than 20 pharmacy professionals were deployed in only 0.9% of health facilities – (all were tertiary and general hospitals).



**Figure 34: Pharmacy professionals assigned to the pharmacy units of health facilities**

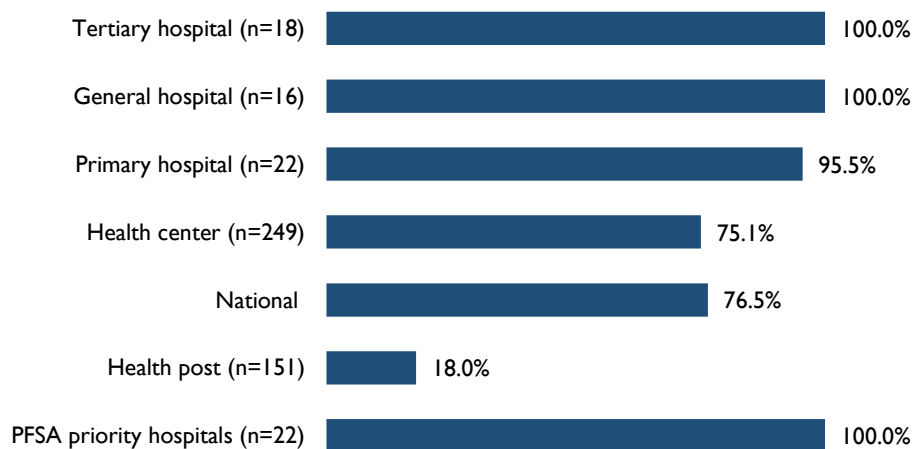
Nationally, 49.5% of hospitals and health centers had at least one non-pharmacy professional in their pharmacy units. None of the tertiary and EPSA priority hospitals had non-pharmacy professionals assigned to their pharmacy units. Figure 35 illustrates health facilities having at least one non-pharmacy professional in their pharmacy units, by health facility level.



**Figure 35: Facilities having non-pharmacy professionals in pharmacy units**

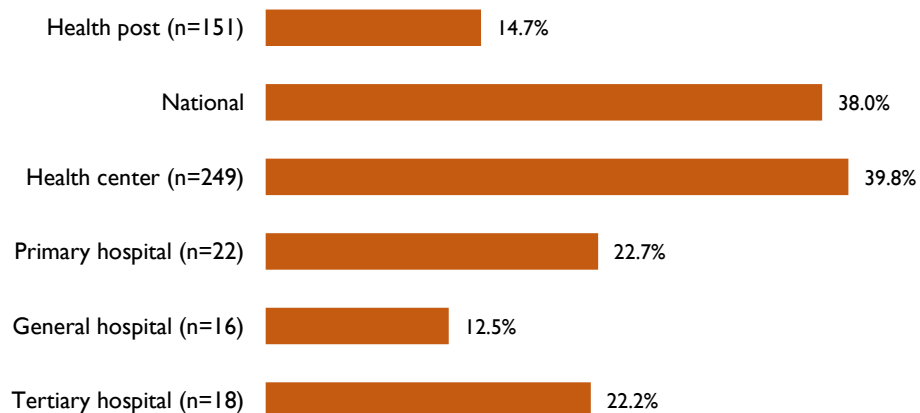
### IPLS training

Nationally, slightly more than three-quarters of hospitals and health centers (76.5%) had at least one health professional in their pharmacy unit trained on IPLS. All EPSA priority hospitals, tertiary hospitals, and general hospitals had IPLS trained health professional staff assigned to their pharmacy unit. However, only 18.0% of the health posts had staff trained in IPLS. Figure 36 below has the details by the health facility level.



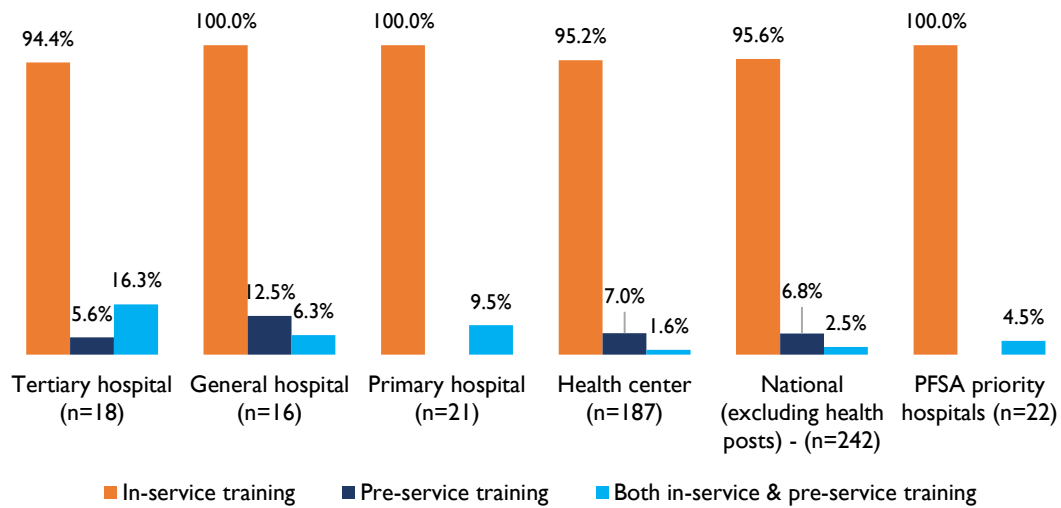
**Figure 36: Health facilities having at least one IPLS trained pharmacy unit staff**

Figure 37 details health facilities with at least 80% of pharmacy unit staff trained in IPLS. Nationally, 38% of hospitals and health centers had 80% or more of their pharmacy unit staff trained in IPLS. With regard to this parameter, health centers were on top with 39.8% of them having at least 80% of their pharmacy unit staff trained in IPLS. At the bottom were general hospitals with only 12.5% staff having received the training.



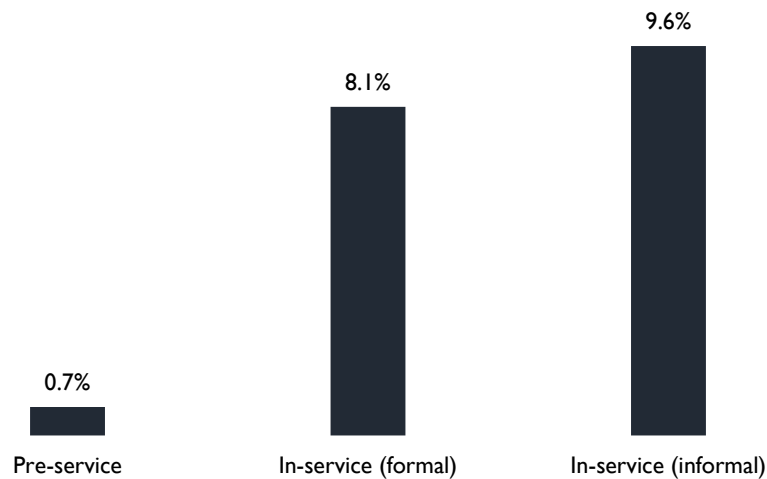
**Figure 37: Health facilities with at least 80% of pharmacy unit staff trained in IPLS**

Key respondents were asked if their pharmacy staff had been trained through in-service training, pre-service training or both. In-service training was the most common means pharmacy staff were trained in IPLS. Nationally, 95.6% of hospitals and health centers had in-service trained staff as compared to only 6.8% of facilities having pre-service trained staff. Only 2.5% of the health facilities had both pre-service and in-service trained staff. Figure 38 illustrates the training modality for health facility staff, by level.



**Figure 38: Hospitals and health centers having staff trained in IPLS with different modalities**

As shown in figure 39 below, of the total health posts surveyed, 9.6% had staff trained with informal in-service IPLS training (OJT), 8.1% with formal in-service IPLS training, and less than 1% with pre-service IPLS training.



**Figure 39: Health posts having staff trained in IPLS with different modalities**

## Storage conditions

To provide clients with high-quality products, adequate well-organized storage areas are vital. To assess the storage conditions of health facilities, 14 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 14 criteria (80 percent) were considered acceptable; those meeting less than nine were rated unacceptable.

## Storage conditions fulfillment

Storage conditions were assessed using 14 criteria (see Table 11). Nationally, 21.8% of hospitals and health centers fulfilled more than 80% of the storage conditions (Figure 40). Hospitals demonstrated better fulfillment of the storage conditions as compared to health centers and health posts; 61.1% of tertiary hospitals, 50.0% of general hospitals, and 59.1% of primary hospitals fulfilled more than 80% of storage conditions as compared to only 18.9% of health centers and 4.6% of health posts. The storage conditions at the 22 EPSA priority hospitals were relatively good with about 55% fulfilling more than 80% of the requirements.

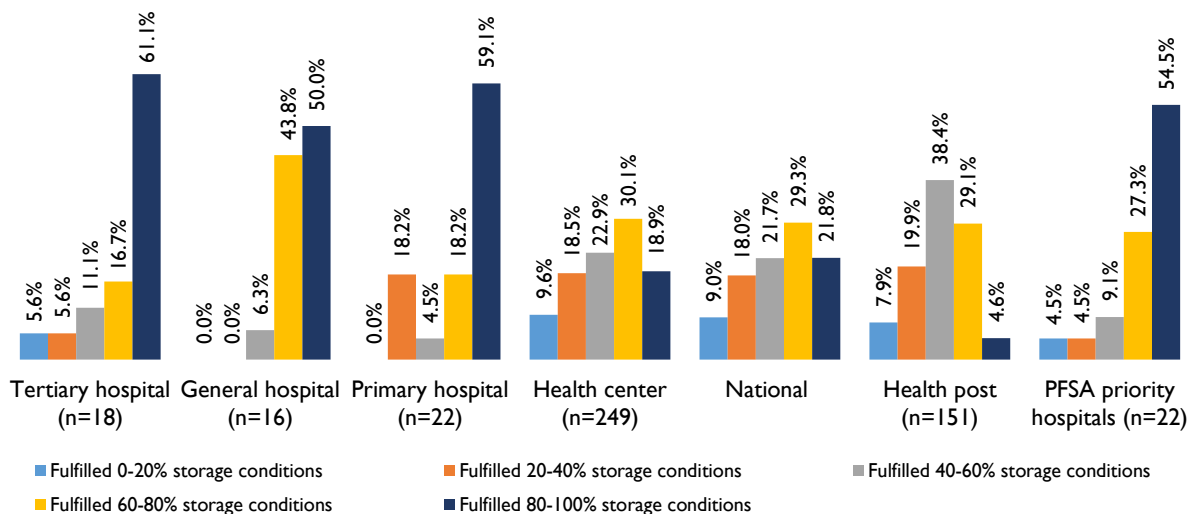


Figure 40: Storage condition fulfillment

Table 11 details fulfillment of each of the 14 storage conditions by health facility type. The top two fulfilled conditions among hospitals were 'separation of unwanted stock from usable stock' (91.1%) and 'protection of pharmaceutical from extreme heat' (89.3%). In the case of health centers, 'storage with a lock' (82.7%) and 'protection from direct sunlight' (78.3%) topped the list. For health posts, 'protection from direct sunlight' (81.5%) and 'protection from extreme heat' (72.8%) were the top two fulfilled conditions. The least fulfilled condition across all facility types was 'store having a signage indicating access to only authorized personnel' with only 33.9% of hospitals, 10.0% of health centers, and 7.9% of health posts fulfilling it.

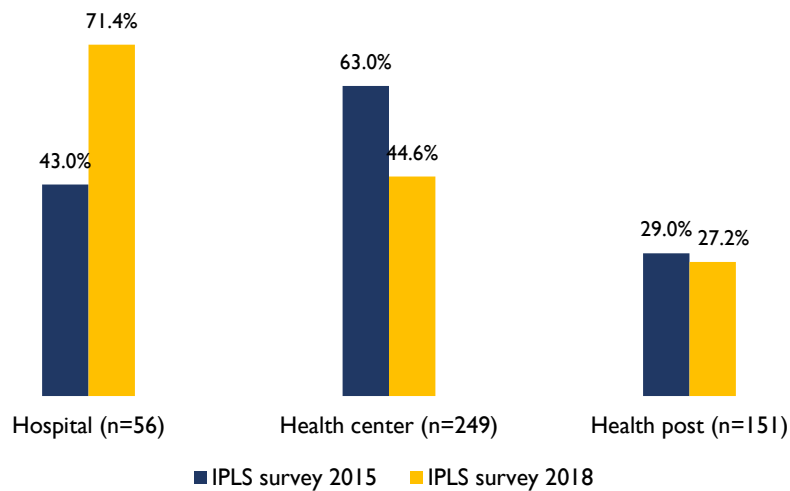
**Table 11: Percent of health facilities meeting individual storage criteria by facility type**

<b>Storage conditions</b>	<b>Hospital (n=56)</b>	<b>Health center (n=249)</b>	<b>Health post (n=151)</b>
Separation of unwanted stock from usable stock	91.1%	65.5%	53.0%
Protection of pharmaceuticals from extreme heat	89.3%	71.1%	72.8%
Pharmaceuticals logically arranged/organized	87.5%	61.0%	38.4%
Protection of pharmaceuticals from direct sunlight	87.5%	78.3%	81.5%
Storeroom with a lock	87.5%	82.7%	58.9%
Pharmaceuticals organized in a manner facilitating FEFO	83.9%	57.8%	39.1%
Protection from water	82.1%	61.0%	68.2%
Product and cartons maintained in good condition	82.1%	57.0%	58.3%
Visibility of labels and expiry and/or manufacturing dates	80.4%	58.6%	28.5%
Storeroom maintained in good condition	78.6%	55.8%	43.7%
Storeroom free from insect, rodents, or other animals (except cats)	73.2%	64.3%	47.0%
Narcotic & psychotropic substances stored separately	55.4%	17.3%	-
Storeroom with sufficient space	39.3%	42.6%	68.9%
Storeroom with signage indicating access to authorized personnel only	33.9%	10.0%	7.9%

\*The criterion relating to narcotic and psychotropic substances does apply to health posts as they do not manage these products.

Storage conditions from this survey were compared to those of the 2015 IPLS survey. Ten storage conditions were common to both surveys namely: (1) availability of sufficient space in stores; (2) pharmaceutical logically arranged/organized; (3) separation of unwanted stock from usable stock; (4) protection of pharmaceuticals from direct sunlight; (5) storeroom free from insect, rodents, or other animals; (6) storeroom maintained in good condition; (7) visibility of identifications (labels, expiry dates and/or manufacturing dates); (8) product and cartons maintained in good condition; (9) pharmaceuticals organized in a manner facilitating First to Expire, First Out (FEFO); and (10) storeroom with a lock.

The percent of hospitals that met at least 80% of the conditions increased from 43.0% in 2015 to 71.4% in 2018. However, the percent of health centers meeting 80% of conditions declined from 63.0% in 2015 to 44.6% in 2018. For health posts, the percentage remained about the same: 29% in 2015 and 27.2% in 2018 (Figure 41).



**Figure 41: Percent of health facilities meeting at least 80% of common storage conditions, 2015 and 2018**

### Cold chain equipment for vaccines storage

Vaccines require temperature controlled storage including refrigerators and freezers.

#### Refrigerator availability

The survey assessed availability of at least one refrigerator, functional or non-functional, for the management of vaccines at health facilities. The assessment was done at both the general medical store and EPI department/store of each health facility (vaccines are generally speaking stored at the EPI unit; however, some facilities may also store in the pharmacy store). Nationally, 96.6% of hospitals and health centers had refrigerators at either the store or EPI unit. Health centers had the highest availability of refrigerators (96.8%) followed by primary and tertiary hospitals (95.5% and 88.9% respectively). Availability of refrigerators at EPSA priority hospitals was found to be 86.4%, which is slightly lower than the other hospitals (94.1%). Refrigerator availability was the lowest among health posts (22.5%).

All refrigerators in the general hospitals were functional at the time of the survey. Among tertiary and primary hospitals, 93.3% and 74.4% of all available refrigerators were functional respectively. The lowest proportion of functional refrigerators was observed among health centers (67.5%).

Figure 42 illustrates the availability and functionality of refrigerators by health facility level.



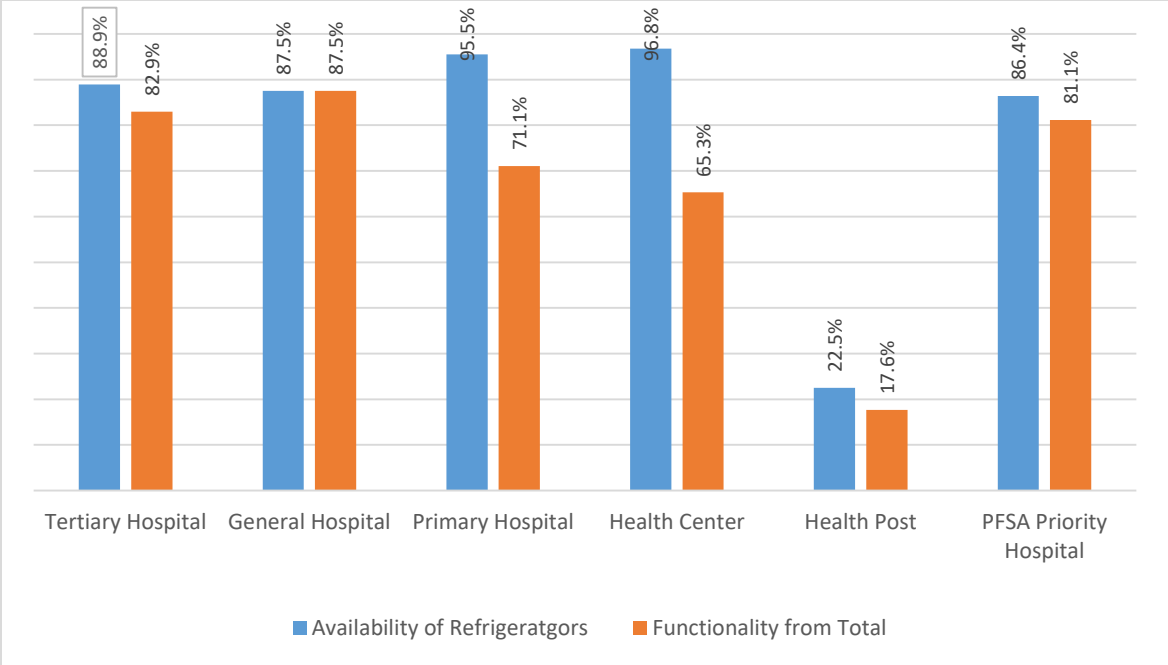


Figure 42: Percent of health facilities with any refrigerator and with a functional refrigerator for vaccine management

**Source of energy**

The energy source of most functional refrigerators across all health facility levels was electricity from the main grid. All tertiary and general hospitals, and 96.6% of primary hospitals utilized this source of energy. Solar energy was the dominant source of energy for refrigerators in health posts. Of the total refrigerators in health posts, 81.3% relied on solar energy as the main energy source. All of the EPSA priority hospitals reported grid electricity as their main source of energy. Figure 43 illustrates source of energy for functional refrigerators.

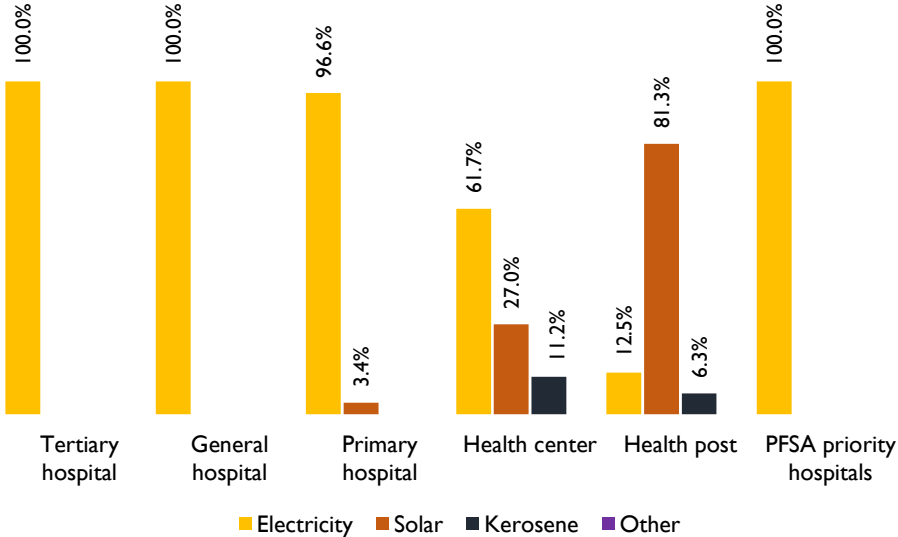


Figure 43: Percentage of facilities with different source of energy for functional refrigerators

### Temperature recording device

Availability of functional thermometer/temperature recording device was assessed for each of the functional refrigerators. Availability of thermometer/temperature recording device was higher in hospitals (tertiary, general, and primary) compared to health centers and health posts. Primary hospitals had the highest availability of thermometer/temperature recording device, with 86.2% of the functional refrigerators having thermometer/temperature recording device. Only 72.9% of the functional refrigerators at health posts had a dedicated thermometer/temperature recording device).

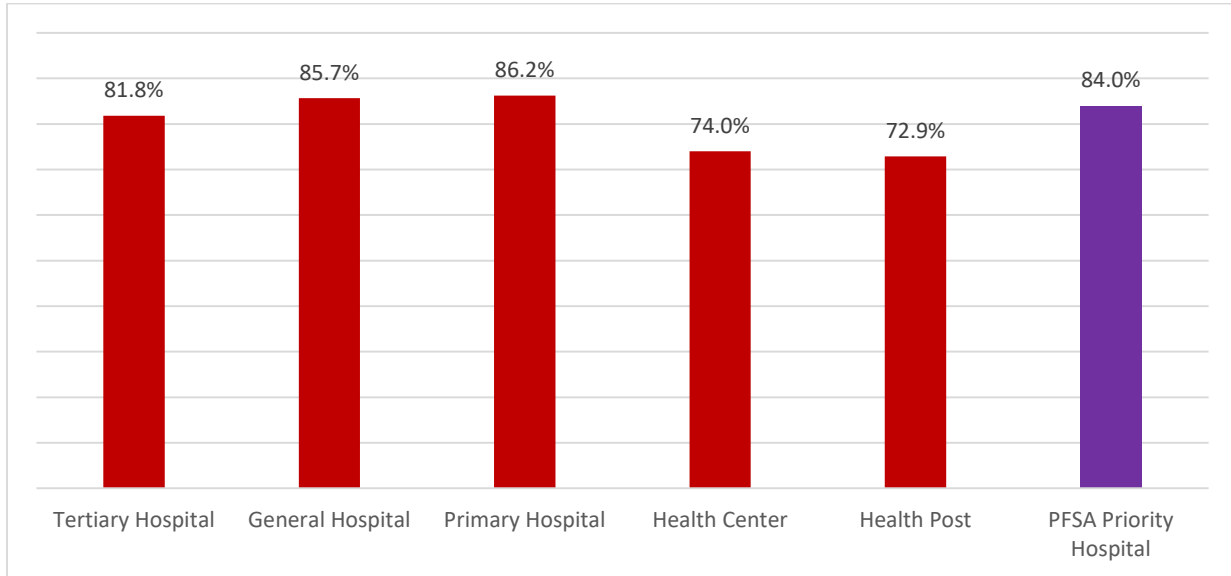


Figure 44: Availability of temperature recording device

The temperature in functional refrigerators with functional thermometer/temperature recording device was examined for conformity with the desired temperature range of 0 to +8 degree centigrade. On average 97.1% of refrigerators in health posts 92% of those in primary hospitals and 90.0% of those in health centers were found to be in compliance (Figure 45).

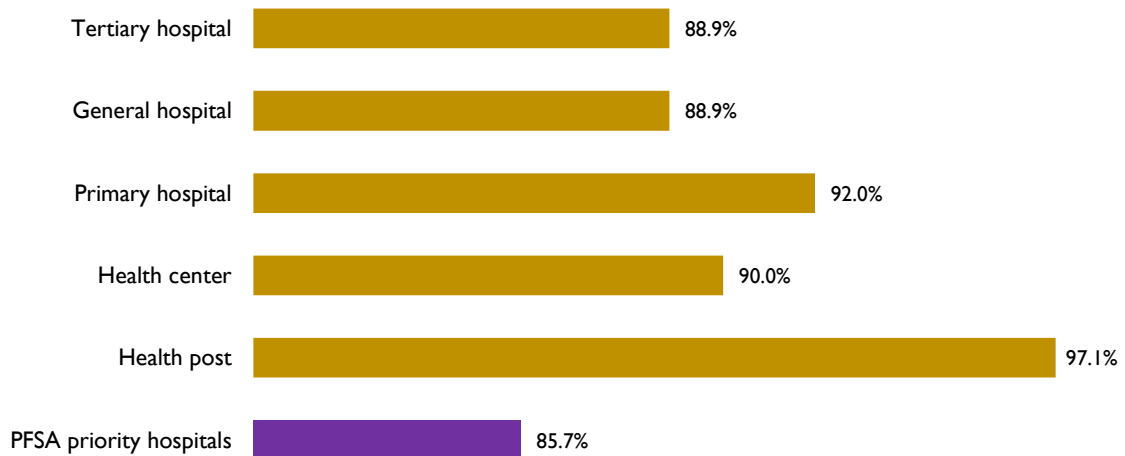


Figure 45: Percent Functional refrigerators found to be within the desired temperature range

### Temperature recording chart

Availability of temperature recording charts was assessed for facilities with functional refrigerators and functional thermometer/temperature recording devices. General hospitals and health centers had the highest temperature recording chart availability (94.4% and 92.3% respectively). Only 17.1% of health posts had charts (Figure 46).

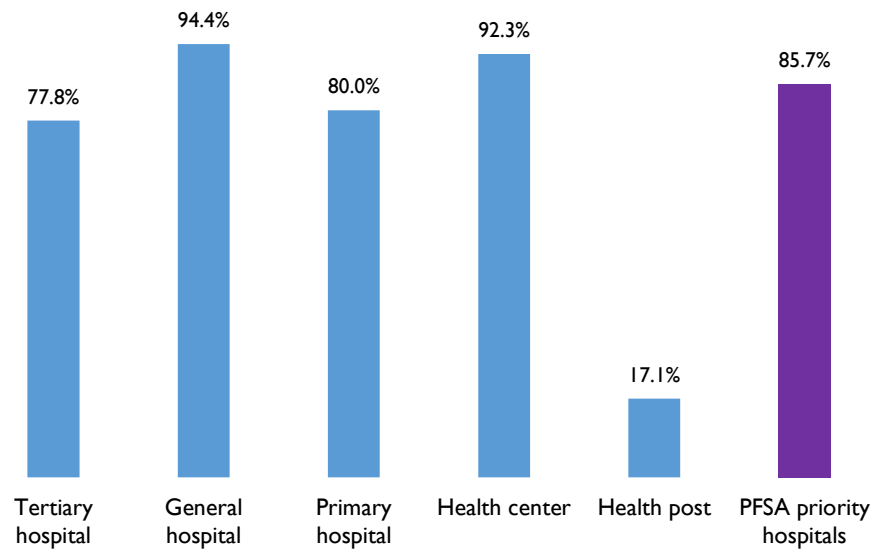


Figure 46: Percentage of facilities with temperature recording chart

Even though refrigerators in general hospitals and health centers had better availability of temperature recording chart, only less than half of the charts were updated. Only 41.2% in general hospitals and 45.2% in health centers had updated temperature monitoring chart. Availability of updated charts was the highest in primary hospitals (75.0%) followed by those in tertiary hospitals (50.0%).

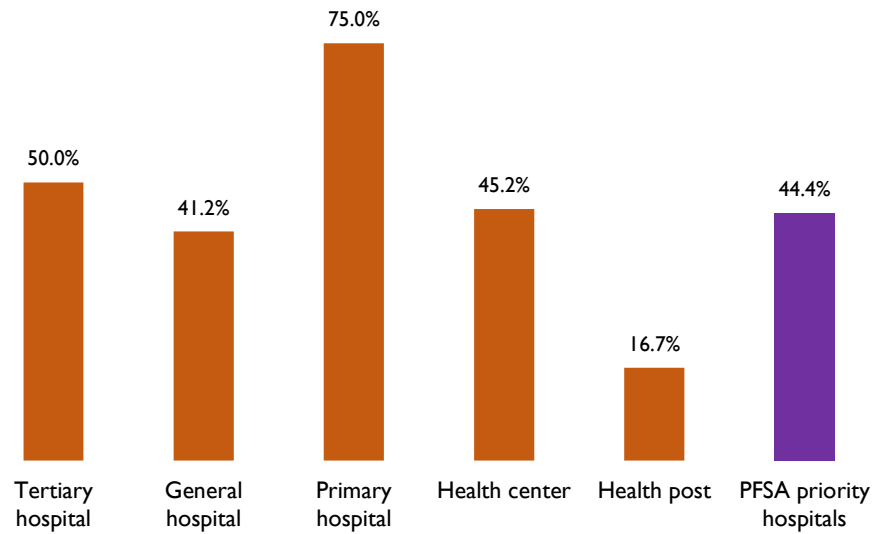


Figure 47: Percentage of facilities with updated temperature recording chart

### Transportation and distribution

In the Ethiopian supply chain, commodities are delivered to facilities using a combination of mechanisms. Since March 2012, EPISA has been delivering program commodities directly to many health facilities including all hospitals and “accessible” health centers. As an interim approach, the remaining health centers are receiving their products through their Woredas or zonal health offices (EPISA delivers to those). For RDF products, health facilities are expected to use their own vehicle, or other transportation, to collect their purchased products from EPISA hubs. Health posts are expected to collect their products from their affiliated health center every month.

### Primary immediate sources of supply

Respondents were asked their main source of supply for various program commodities. EPISA was by far the main source of supply for most programs and RDF commodities. WoHOs have still significant contribution in supplying program commodities to health facilities. The relatively high contributions of Regional Health Bureau, Zones, and WoHO to HIV RTK distribution (1.5%, 4.2%, and 36.8% respectively) probably reflects the fact that these items were only recently being integrated into IPLS. Table 12 below describes the primary immediate sources of supply by program and RDF.

Table 12: Primary immediate sources of supply

Programs	EPISA	RHB	Zone/sub city	WoHO	Health* center	NGO	Private	Others	Do not manage
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ART	98.3%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%
RTK (HIV)	23.7%	1.5%	4.2%	36.8%	10.5%	0.0%	0.0%	0.2%	23.0%
TB	36.4%	0.2%	0.4%	28.7%	16.9%	0.0%	0.0%	0.7%	16.7%
FP	37.1%	0.4%	0.4%	29.4%	31.6%	0.0%	0.0%	0.0%	1.1%
Malaria	35.3%	0.4%	0.7%	27.2%	25.7%	0.0%	0.0%	0.7%	10.1%
MNCH	35.3%	0.7%	1.1%	29.4%	30.7%	0.0%	0.0%	0.2%	2.6%
RDF (Budget)	71.8%	0.3%	0.7%	20.0%	0.0%	0.0%	1.6%	5.6%	0.0%

\*Health centers supplied only health posts.

### Transportation and modes of delivery

The survey assessed modes of deliveries for program and RDF health products to facilities. The two general modalities assessed are (1) if the facilities pick up from the immediate source and (2) if the immediate source delivers to the health facilities. In general, most of the health facilities reported program health products were delivered while RDF products were picked up by the health facility staff. In the case of ART, 95.9% of health facilities reported delivery by the immediate suppliers. For the other programs, however, facility pick up was equally important. The proportion of health facilities that picked up pharmaceutical for RTK (HIV), TB, FP, Malaria, and MNCH was 42.9%, 49.9%, 46.1%, and 49.5% respectively. Facility pick up was the main mode of transportation for RDF (71.5% of health facilities). Figure 48 details modes of delivery of health products by program for all health facilities assessed, including health posts except for RDF (budget).

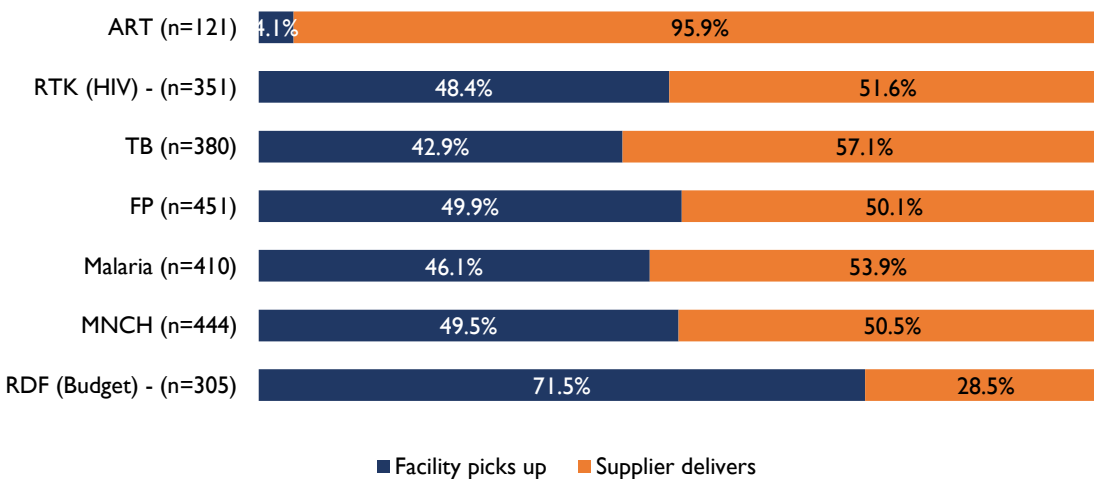


Figure 48: Pharmaceutical transportation modality

Further analysis was done on the mode of delivery of health products by the level of health facilities, regarding facility pick up. Generally, the proportion of health centers and health posts that picked up products from their immediate sources across all programs was higher than

hospitals, except in the case of ART. Figure 49 further illustrates the breakdown of health facilities that picked up products themselves by type.

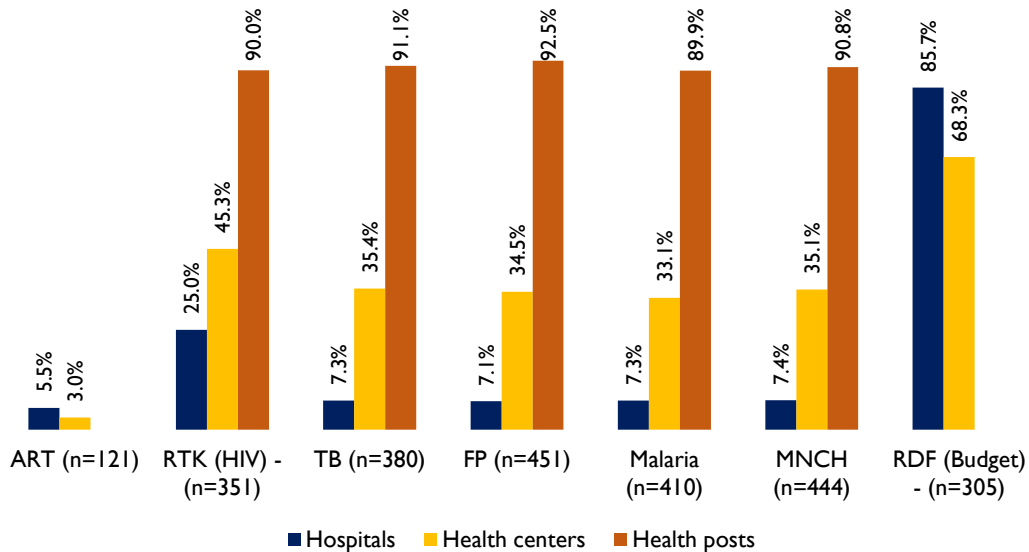


Figure 49: Facilities that picked up pharmaceutical by type

For health facilities that collected health products, the means of transportation commonly used was assessed. Facility vehicle was the main means of transportation for tertiary and general hospitals (75.0% and 66.7%, respectively). Primary hospitals and health centers reported rental vehicle as the main means of transportation (50.0% and 44.1% respectively). The majority of health posts (53.6%) reported 'on foot' as the main means of transporting health products. Health centers and health posts used more diverse means of transportation compared to hospitals. Figure 50 details the means of transportation commonly used by health facilities to collect products.

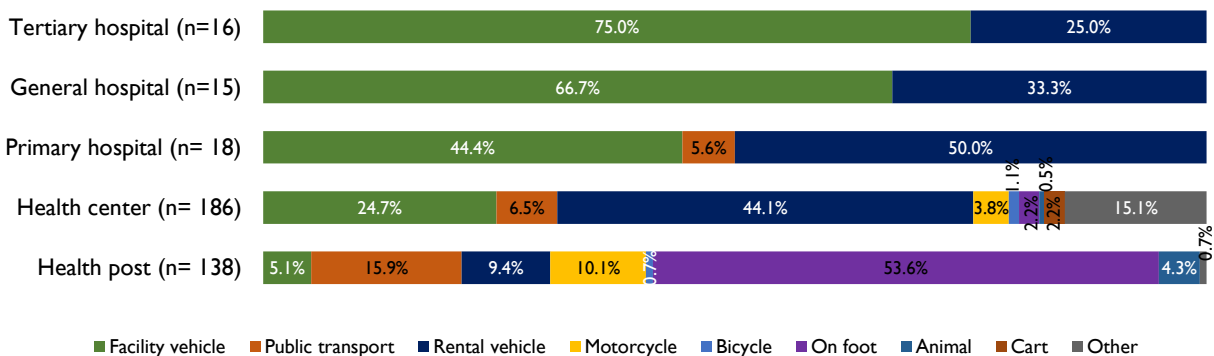


Figure 50: Means of transportation most commonly used by health facility type

### EPSA delivery accompanied by pharmacy professional

EPSA have established a standard that any EPSA delivery of health products to health facilities should be accompanied by a pharmacy professional. Respondents were asked if their most recent

EPSA delivery was accompanied by a pharmacy professional. Primary hospitals had the highest compliance rate– with 90% of the hospitals indicating the most recent delivery was accompanied by a pharmacy professional. The least compliant was for deliveries to tertiary hospitals (50.0%).

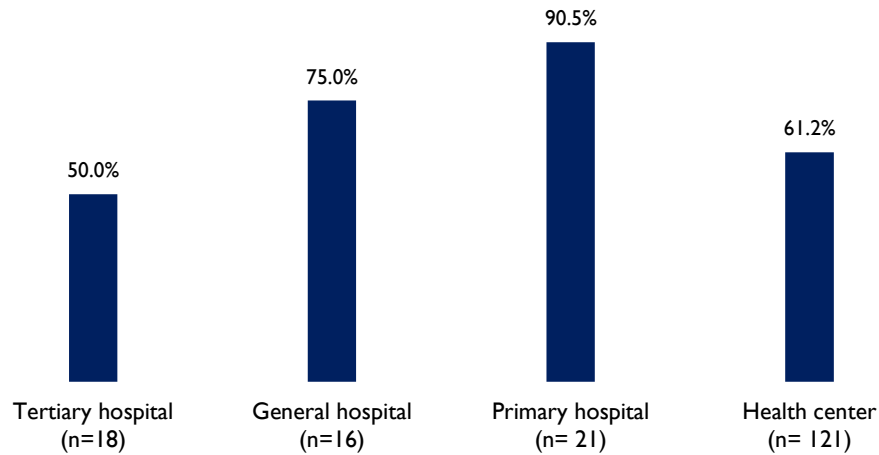


Figure 51: EPSA delivery accompanied by pharmacy professional

## Supervision

### Logistics related supervision by facility type

As shown in figure 52; at national level, 25.9% of hospitals and health centers reported receiving a supervisory visit in the one month period preceding the survey. Slightly more than one-third (37.0%) had been supervised 1-3 months before the survey and 6.0% of the facilities were supervised more than 6 months prior to the survey. In total, 74.8% of all health centers and hospitals had at least one supportive supervision within 6 months preceding the survey. Half of the general hospitals were recently supervised (in the one month period preceding the survey) which was the highest. On the other hand, health centers had the lowest recent supervision (22.5%). About 5.6% of tertiary hospitals, 4.0% of health centers, and 4.6% of health posts reported receiving no supervisory visits.

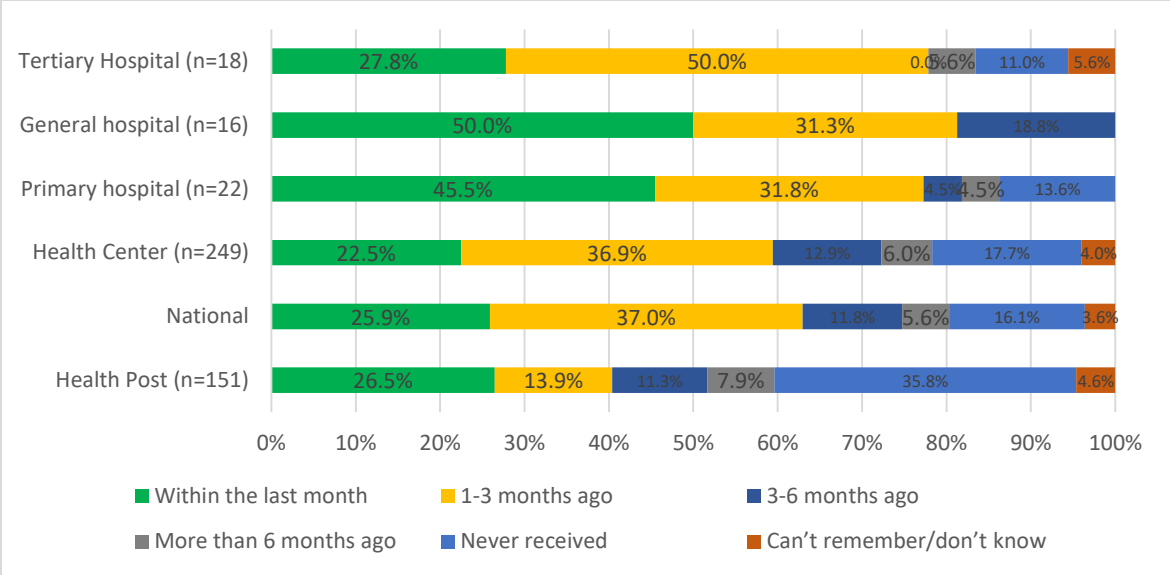


Figure 52: Percent of health facilities that have received logistics related supervisory visits over time

## Supply chain performance

### Stock availability

One of the most important performance measures of a health logistics system is stock availability. The survey assessed stock availability of 37 select indicator pharmaceuticals on the day of the survey and frequency and duration of stock-outs over the six months preceding the survey. Availability was assessed only regarding those pharmaceuticals that each health facility is expected to manage.

#### Stock availability on the day of the survey

Stock availability on the day of the survey was assessed by direct observation of usable stock in the medical stores and dispensaries of each health facility. The majority of the health facilities had most of the pharmaceuticals in stock on the day of the survey. Hospitals had the highest rate of availability. Average availability of pharmaceuticals at hospitals was 92.5% compared to 76.8% at health centers and 69.9% at health posts. The overall weighted average availability of the pharmaceuticals in all of the hospitals and health centers assessed was 79.2%. In contrast, SARA, 2018 reported lower average availability at facility level (28%). SARA, 2018 average availability report included also private clinics.

Significant variations were observed in availability of each product, see Table 13. At hospitals, the most available pharmaceuticals were Amoxicillin - 250mg/500mg, Ceft-0.5gm/1gm- inj, ORS, and HCT- 25mg (100.0% each). On the other hand, Amoxicillin -125mg/250mg-Tab or Amox-125 mg/5ml - Susp and FeFol - Tab were the least available (69.6%). TDF/3TC/EFV - 300/150/600mg was the most available pharmaceutical (97.0%) in health centers whereas Met- 500mg was the least available (16.9%). In health posts, ORS was the most available pharmaceutical (97.6%) and Paracetamol - Supp/syrup was the least available (26.9%). This is consistency with the findings



from a study (SARA, 2018) which indicated highest availability for ORS at health post level, urban setting (66%), and rural setting (52%)<sup>14</sup>. Availability of Artemether Lumafantrine (20/120mg) was assessed for locations susceptible to malaria.

The average availability of Artemether Lumafantrine (any presentation)-Tab was 73.3% at health facility. Similarly, the average availability of Amitriptyline – 25mg tablet was 59.1%.

Table 13 describes the availability of each of the 37 pharmaceuticals by health facility type and for all health facilities.

**Table 13: Pharmaceuticals availability on the day of survey**

Products	Hospital	Health Center	Health post	Facility Weighted average
<b>Amoxicillin - 250mg/500mg - Capsule</b>	100.0%	88.0%		90.4%
<b>Artemether Lumafantrine (any presentation)-Tab*</b>	92.7%	77.8%	49.6%	73.3%
<b>Ceftriaxone - 0.5gm/1gm- injection</b>	100.0%	86.3%		89.2%
<b>Ciprofloxacin-250mg/500mg -Tablet</b>	94.6%	85.1%		87.0%
<b>Cotrimoxazole -480mg/960mg -Tablet</b>	96.4%	84.3%		86.8%
<b>Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Suspension</b>	69.6%	85.5%	77.9%	81.5%
<b>Ringer Lactate - 500ml/1000 ml-Solution</b>	98.2%	83.5%		86.6%
<b>Gentamicin -20mg/ml or Gent-10mg/ml- Injection</b>	NA	43.8%	36.6%	38.8%
<b>Gentamicin-80mg/ml or 40mg/ml - Injection</b>	96.4%	72.7%	NA	75.3%
<b>Mebendazole -100 mg /Albendazole - 400 mg -Tab or Mebendazole/Albendazole - Suspension</b>	98.2%	80.7%	67.6%	79.8%
<b>ORS-Sachet</b>	100.0%	90.0%	97.6%	93.1%
<b>Oxytocin-Injection</b>	98.2%	81.9%	NA	85.4%
<b>Paracetamol -Suppository/or syrup</b>	89.3%	66.1%	26.9%	68.1%
<b>RHZE/RH -Kit</b>	96.4%	86.7%	NA	88.7%
<b>Medroxyprogesterone - Injection</b>	96.4%	90.0%	90.3%	90.9%
<b>Tetracycline Eye Ointment</b>	81.8%	63.1%	54.4%	62.9%
<b>Implanon</b>	94.6%	86.7%	76.6%	84.8%
<b>AZT/3TC/NVP - 60/30/50mg -Tablet**</b>	94.1%	92.4%	NA	93.1%
<b>TDF/3TC/EFV - 300/150/600mg -Tablet**</b>	96.4%	97.0%	NA	96.8%
<b>NVP- 10mg/ml-Suspension**</b>	98.2%	90.9%	NA	94.4%
<b>Iron + Folic Acid-Tablet</b>	69.6%	75.9%	55.2%	69.7%
<b>Magnesium Sulphate - Injection</b>	87.5%	63.5%	NA	69.1%
<b>Hydrochlortiazide-25mg-Tablet</b>	100.0%	56.9%	NA	69.1%
<b>Metformin- 500mg- Tablet</b>	89.3%	16.9%	NA	56.2%
<b>Diazepam-5mg-Injection</b>	89.3%	26.6%	NA	53.6%
<b>Adrenaline-Injection</b>	98.2%	81.9%	NA	85.4%
<b>Amitriptyline-25mg-Tablet</b>	98.2%	26.5%	NA	59.1%
<b>HIV RTK (Screening)</b>	94.6%	84.7%	NA	86.7%
<b>Malaria RDT*</b>	-	59.9%	48.8%	56.3%

<sup>14</sup> EPHI, 2018. Service Availability & Readiness Assessment (SARA).

<b>Urine dipstick</b>	89.1%	59.0%	NA	66.5%
<b>Blood lancet</b>	94.6%	75.9%	NA	80.0%
<b>Blood glucose test strip</b>	94.6%	36.9%	NA	58.0%
<b>Nifedipine -20mg-Tablet</b>	97.1%	NA	NA	97.1%
<b>Morphine -10mg/ml- Injection</b>	58.8%	NA	NA	58.8%
<b>Cyclophosphamide-0.5gm/ 1gm-Injection</b>	80.0%	NA	NA	80.0%
<b>Giemsa stain solution</b>	87.5%	57.4%	NA	65.1%
<b>Pentavalent -Injection</b>	86.3%	95.6%	74.1%****	92.6%
<b>Weighted average</b>	92.5%	76.8%	69.9%	79.2%

\*Availability was assessed only for locations susceptible to malaria.

\*\*Availability was assessed only for ART health facilities.

\*\*\*Cyclophosphamide-0.5gm/1gm-Inj was assessed only for 6 hospitals that are expected to manage the product.

\*\*\*\*The denominator was health facilities that reported having a refrigerator.

Availability was compared for electronic and paper sites as shown in Table 14 below. The weighted average availability of tracer pharmaceuticals on the day of the visit was 82.0% for Dagu sites and 78.0% for paper-based sites. For 22 of 37 items, the availability was higher at Dagu sites compared with paper-based sites.

**Table 14: availability of Tracer items, time of visit Electronic) and paper base sites**

<b>Products</b>	<b>Dagu (HCMIS FE)</b>	<b>Paper based</b>
<b>Amoxicillin-125mg/250mg-Tab or 125 mg/5ml – Suspension</b>	71.7%	87.3%
<b>Adrenaline-Injection</b>	88.0%	83.6%
<b>Amitriptyline-25mg-Tablet</b>	68.5%	27.2%
<b>Amoxicillin - 250mg/500mg – Capsule</b>	91.3%	89.7%
<b>Artemether + Lumafantrine (any presentation)-Tab*</b>	86.8%	77.8%
<b>AZT/3TC/NVP - 60/30/50mg -Tablet**</b>	98.7%	82.9%
<b>Blood glucose test strip</b>	71.7%	37.1%
<b>Blood lancet</b>	84.8%	77.0%
<b>Ceftriaxone 1gm + 500mg injection</b>	93.5%	86.9%
<b>Ciprofloxacin-250mg/500mg –Tablet</b>	87.0%	86.9%
<b>Diazepam-5mg-Injection</b>	68.5%	25.0%
<b>Gent-20mg/ml or Gent-10mg/ml-Injection</b>	29.3%	43.7%
<b>Gent-80mg/ml or 40mg/ml – Injection</b>	73.9%	78.4%
<b>Giemsa stain solution</b>	71.7%	59.2%
<b>HIV RTK - Screening</b>	87.0%	86.4%
<b>Hydrochlorthiazide-25mg-Tablet</b>	82.6%	57.1%
<b>Implanon - 68mg</b>	88.0%	88.2%
<b>Iron + Folic Acid-Tablet</b>	67.4%	77.9%
<b>Magnesium Sulphate 50% in 20ml injection - [Ampoule]</b>	72.8%	65.7%
<b>Mebendazole -100 mg /Albendazole - 400 mg -Tab or Mebendazole/Albendazole –Suspension</b>	90.2%	81.2%
<b>Medroxyprogesterone - Injection</b>	89.1%	92.0%
<b>Metformin- 500mg- Tablet</b>	58.7%	17.8%
<b>Morphine 10mg/ml injection any volume - [Ampoule])</b>	56.3%	100.0%
<b>mRDT*</b>	60.0%	59.9%

<b>Nifedipine -20mg-Tablet</b>	96.9%	100.0%
<b>NVP- 10mg/ml-Suspension**</b>	93.7%	95.2%
<b>ORS-Sachet</b>	85.0%	92.4%
<b>Oxytocin-Injection</b>	85.9%	84.5%
<b>Paracetamol -Suppository/syrup</b>	78.3%	67.0%
<b>Pentavalent –Injection</b>	87.4%	96.8%
<b>RHZE/RH –Kit</b>	90.2%	87.8%
<b>Ringer Lactate - 500ml/1000 ml-Solution</b>	84.8%	86.9%
<b>Cotrimoxazole -480mg/960mg -Tablet</b>	90.2%	85.0%
<b>TDF/3TC/EFV - 300/150/600mg -Tablet**</b>	96.2%	97.6%
<b>Tetracycline - Eye Ointment</b>	75.0%	61.6%
<b>Urine dipstick</b>	78.3%	58.5%
<b>Weighted Average</b>	<b>82.0%</b>	<b>78.0%</b>

Table 15 presents weighted average availability in the 2018 and 2015 surveys. Only items that were common in both surveys were considered.

**Table 15: Average availability on the day of the survey in 2018 and 2015**

<b>Pharmaceuticals</b>	<b>IPLS 2018</b>	<b>IPLS 2015</b>
Amoxicillin - 250mg/500mg - Capsule	90%	95%
Artemether Lumafantrine (any presentation)-Tablet	73%	88%
Ceftriaxone-0.5gm/1gm- injection	89%	86%
Ciprofloxacin -250mg/500mg -Tablet	87%	90%
Cotrimoxazole -480mg/960mg - Tablet	87%	93%
Gentamicin-80mg/ml or 40mg/ml -Injection	75%	84%
Mebendazole-100 mg /Albendazole-400 mg -Tablet or Suspension	80%	90%
ORS-Sachet	93%	95%
Oxytocin-Injection	85%	94%
Paracetamol –Suppository or Syrup	68%	98%
RHZE/RH –Kit	89%	97%
Medroxyprogesterone - Injection	91%	97%
Implanon	85%	92%
AZT/3TC/NVP - 60/30/50mg -Tab	93%	98%
NVP- 10mg/ml - Suspension	94%	95%
Iron + Folic Acid-Tablet	70%	88%
Blood lancet	80%	95%
Giemsa stain solution	65%	33%
Pentavalent -Injection	93%	83%

Average availability decreased for 16 of 19 items from 2015 to 2018. The only items where availability increased were Ceftriaxone injection, Giemsa stain, and Pentavalent vaccine. This decrease in overall performance was driven by declines in availability at health centers for almost all items. At hospitals, average availability actually increased. Figure 53 compares the average availability of pharmaceuticals by health facility type in 2018 and 2015.

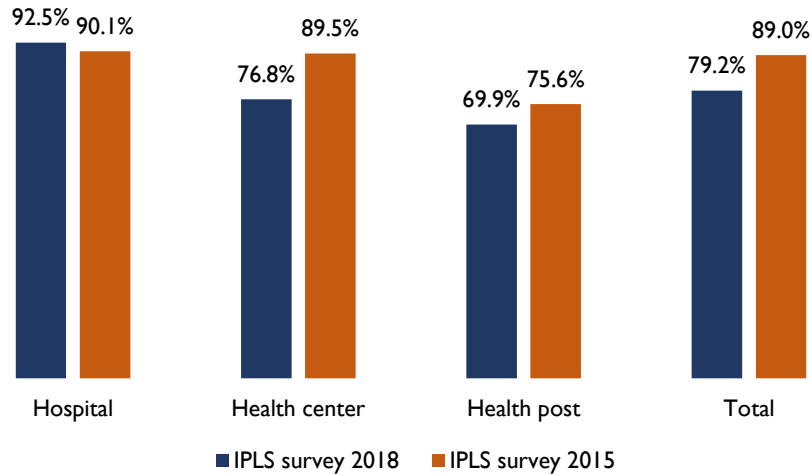


Figure 53: Average availability of pharmaceuticals in 2018 and 2015

### Stock out in the six months preceding the survey

The survey gathered information on health facilities stock-outs of indicator pharmaceuticals over the six months preceding the survey. This information is crucial in tracking the nature of stock outs, and determining whether or not they are chronic including their duration. The data was taken from bin cards, thus the accuracy of the indicator is highly dependent on the accuracy of the recordkeeping.

Table 16 illustrates stock out rates at health facility stores over the six month period for the 37 essential indicator pharmaceuticals which health facilities are expected to manage. Overall, the weighted average stockout rate for hospitals was 27.3%; for health centers 24.9% and for health posts 27.8%.

**Table 16: Percent of Health facilities stocked out at least once within the 6 months preceding the survey**

<b>Pharmaceuticals</b>	<b>Hospital</b>	<b>Health center</b>	<b>Health post</b>	<b>Weighted average</b>
Amox - 250mg/500mg – Cap	10.7%	19.0%	NA	17.2%
Alu(any presentation)-Tab	32.1%	27.7%	38.3%	31.0%
Ceft-0.5gm/1gm- inj	33.9%	27.5%	NA	28.6%
Cipro-250mg/500mg –Tab	20.0%	21.9%	NA	21.5%
Cotri -480mg/960mg –Tab	33.9%	21.1%	NA	23.3%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml – Susp	20.0%	16.1%	23.0%	18.7%
RL-500ml/1000 ml-Solution	29.1%	14.9%	NA	17.3%
Gent -20mg/ml or Gent-10mg/ml-Inj	33.3%	20.9%	39.5%	27.3%
Gent-80mg/ml or 40mg/ml -Inj	9.1%	17.9%	57.1%	18.1%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb –Susp	25.0%	24.2%	24.8%	24.5%
ORS-Sachet	27.3%	17.1%	18.3%	18.0%
Oxytocin-Inj	19.6%	21.6%		21.2%
Paracetamol -Supp/syrup	27.3%	45.7%	65.6%	45.3%
RHZE/RH –Kit	9.3%	13.5%		12.7%
Medroxy - Injection	14.5%	18.7%	13.3%	16.3%
TTC- Eye Oint	50.0%	55.3%	65.1%	57.4%
Implanon	24.1%	23.9%	13.1%	20.3%
AZT/3TC/NVP - 60/30/50mg -Tab**	29.4%	16.4%	NA	24.2%
TDF/3TC/EFV - 300/150/600mg -Tab**	27.8%	6.3%	NA	23.3%
NVP- 10mg/ml-Susp	50.0%	17.7%	NA	24.7%
FeFol –Tab	55.8%	42.6%	44.9%	44.7%
MgSO4 – Inj	51.8%	36.8%	NA	39.4%
HCT- 25mg-Tab	35.7%	33.5%	NA	34.0%
Met- 500mg- Tab	31.5%	52.9%	NA	41.4%
Diazepam-5mg-Inj	56.4%	70.4%	NA	65.7%
Adrenaline-Inj	10.7%	18.4%	NA	16.7%
Amitriptyline-25mg-Tab	32.7%	40.4%	NA	37.4%
RTK Screening	50.0%	35.9%	NA	38.2%
mRDT		33.0%	35.7%	33.9%
Urine dipstick	37.5%	32.6%	NA	33.7%
Blood lancet	16.7%	9.2%	NA	10.6%
Blood glucose test strip	30.4%	41.8%	NA	38.0%
Nifedipine -20mg-Tab	41.2%	NA	NA	41.2%
Morphine -10mg/ml- Inj	42.3%	NA	NA	42.3%
Cyclophosphamide-0.5gm/ 1gm-Inj	62.5%	NA	NA	62.5%
Penta -Inj	14.3%	15.4%	18.3%	15.9%
<b>Weighted average</b>	<b>27.2%</b>	<b>24.9%</b>	<b>27.8%</b>	<b>25.7%</b>

\*\*Stock out rate was assessed only for ART health facilities.

### **Frequency of stock out in the six months preceding the survey**

The frequency of stockouts was assessed in the facilities that had at least one stock out in the six months preceding the survey using bin cards as a source of data. The data was gathered from health facility stores only, it did not assess if medicines were available in dispensaries at the time in question. The majority of hospitals, health centers, and health posts had 1-2 stock-outs in the

six months preceding the survey. Table 17 shows the frequency of stock out of the 13 priority indicator pharmaceuticals by health facility type.

**Table 17: Frequency of stock outs within the 6 months preceding the survey**

Priority indicator pharmaceuticals	Hospital		Health center	
	1-2 stock out	More than 2 stock out	1-2 stock out	More than 2 stock out
Alu(any presentation) - Tab	93.8%	6.2%	94.9%	5.1%
Ceft-0.5mg/1gm-inj	94.4%	5.6%	100.0%	0.0%
Cotri-480mg/960mg - Tab	100.0%	0.0%	93.9%	6.1%
Amox-125mg/250mg-Tab or Amox-125mg/5ml - Susp	100.0%	0.0%	100.0%	0.0%
ORS-Sachet	100.0%	0.0%	95.7%	4.3%
RHZE/RH - Kit	75.0%	25.0%	88.0%	12.0%
Medroxy - Injection	100.0%	0.0%	100.0%	0.0%
Implanon	91.7%	8.3%	91.2%	8.8%
AZT/3TC/NVP - 60/30/50mg – Tab	81.8%	18.2%	87.5%	12.5%
TDF/3TC/EFV - 300/300mg/600mg - Tab	100.0%	0.0%	100.0%	0.0%
NVP - 10mg/ml - Susp	73.1%	26.9%	100.0%	0.0%
mRDT	-	100.0%	100.0%	0.0%
Penta -Inj	100.0%	0.0%	85.0%	15.0%

### Duration of stock out

The average duration of stock out in the six months preceding the survey was assessed for indicator pharmaceuticals.<sup>15</sup> Health centers had the highest weighted average stockout duration (51 days), followed by hospitals (37 days) and health posts (17 days). The weighted average stockout duration for all health facilities assessed was 44 days. Implant 68mg had the highest stock out duration (56 days) among hospitals. The pharmaceuticals with the highest stock out duration among health centers and health posts were Cotrimoxazole – 400/80mg or 800/160mg and Pentavalent vaccine (76 days each). Table 18 illustrates the average days of stock out for pharmaceuticals with stock out in the six months preceding the survey.

**Table 18: Duration of stock out in the 6 months prior to the survey (days)**

Priority indicator pharmaceuticals	Hospital	Health center	Health post	Weighted average
Alu(any presentation)-Tab	32	55	40	48
Ceft-0.5gm/1gm- inj	28	56	-	45
Cotri -480mg/960mg –Tab	44	76	-	60
Amox-125mg/250mg-Tab or Amox-125 mg/5ml – Susp	48	65	69	62
ORS-Sachet	31	52	9	48
RHZE/RH - Kit	41	42	-	38
Medroxy - Injection	18	30	18	27

<sup>15</sup> Note that the average duration of stock out conceals differences among health facilities.

Implanon	56	54	69	56
AZT/3TC/NVP - 60/30/50mg – Tab	40	44	-	37
TDF/3TC/EFV - 300/300mg/600mg - Tab	26	66	-	29
NVP - 10mg/ml - Susp	45	37	-	6
mRDT	-	59	23	-
Penta -Inj*	1	14	76	17
<b>Weighted average</b>	<b>37</b>	<b>51</b>	<b>17</b>	<b>44</b>

\*The assessment was done for health facilities that had vaccine ledger.

## Stock adequacy

IPLS sets out the minimum and maximum inventory levels for facility stores. Hospitals and health centers are required to maintain one to four months of stock whereas health posts should have a minimum of a half-month and a maximum of two months of stock.

Health facilities stock status was assessed for the six months period preceding the survey. Stock on hand or physical inventory count divided by average monthly consumption (AMC) gives the months of stock available. Months of a stock was computed only for facilities that kept adequate information on bin card records.

Table 19 illustrates the months of stock for 13 priority indicator pharmaceuticals by facility type. Most products in all facility types (hospitals, health centers, and health posts) were overstocked (i.e., with more than two months of stock). At hospitals, the proportion of optimally stocked facilities (i.e. 1-4 months of stock) ranged between 2.1% for RHZE/RH (Adult Kit and 31.3% for Cotrimoxazole – 400/80mg or 800/160mg. Findings show a stock management problem with significant overstocking and very few facilities stocked optimally. More than 50% of hospitals were overstocked for 9 of 12 items; for health centers this was true for 10 of 13 items while for health posts it was true for 5 of 7 items. The percentage of hospitals stocked optimally was less than 10% for 4 of 12 items, for health centers this was the case for 7 of 13 items, and for health posts it was true for all seven items.

**Table 19: Percent of facilities, understocked, optimally stocked and overstocked, by facility type**

Priority indicator pharmaceuticals	Hospitals			Health centers			Health posts		
	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked
Alu(any presentation)-Tab	27.5%	7.5%	65.0%	20.9%	7.0%	72.1%	23.8%	0.0%	76.2%
Ceft-0.5gm/1gm- inj	55.6%	33.3%	11.1%	76.5%	17.6%	5.9%			
Cotri -480mg/960mg –Tab	56.3%	37.5%	6.3%	80.5%	9.8%	9.8%			
Amox-125mg/250mg-Tab or Amox-125mg/5ml – Susp	62.5%	25.0%	12.5%	77.8%	16.7%	5.6%	95.8%	0.0%	4.2%
ORS-Sachet	14.3%	14.3%	71.4%	9.2%	5.8%	85.0%	2.9%	2.9%	94.1%
RHZE/RH - Kit	8.5%	6.4%	85.1%	17.2%	6.1%	76.8%			

Medroxy - Injection	2.4%	4.9%	92.7%	13.6%	14.5%	71.8%	7.0%	7.0%	86.0%
Implanon	8.3%	8.3%	83.3%	24.7%	10.8%	64.5%	10.3%	3.4%	86.2%
AZT/3TC/NVP - 60/30/50mg - Tab	28.2%	15.4%	56.4%	13.5%	10.8%	75.7%			
TDF/3TC/EFV - 300/300mg/600mg - Tab	20.8%	20.8%	58.3%	11.1%	3.2%	85.7%			
NVP - 10mg/ml - Susp	32.5%	15.0%	52.5%	8.3%	4.2%	87.5%			
mRDT				20.8%	7.8%	71.4%	14.3%	4.8%	81.0%

Months of stock was also assessed separately for automated sites and paper-based sites. While automated sites also tended to be overstocked the results were better than for paper sites. The percentage of sites stocked optimally was higher in automated versus paper sites for 9 of 12 items and the average (all items) percent of sites optimally stocked was 16.2 percent for automated sites versus 9.1% for paper sites.

**Table 20: Months of stock by HCMIS and paper-based facilities**

Priority indicator pharmaceuticals	HCMIS health facilities			Paper-based health facilities		
	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked
Alu(any presentation)-Tab	25.4%	6.3%	68.3%	20.6%	7.9%	71.4%
Ceft-0.5gm/1gm- inj	57.1%	33.3%	9.5%	77.1%	16.7%	6.3%
Cotri -480mg/960mg -Tab	60.0%	35.0%	5.0%	81.1%	8.1%	10.8%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	46.2%	38.5%	15.4%	87.1%	9.7%	3.2%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	11.6%	9.3%	79.1%	8.8%	5.5%	85.7%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	12.3%	6.8%	80.8%	16.4%	5.5%	78.1%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	7.2%	7.2%	85.5%	13.4%	15.9%	70.7%
Implanon	12.9%	12.9%	74.2%	26.9%	7.5%	65.7%
AZT/3TC/NVP - 60/30/50mg - Tab	24.6%	16.4%	59.0%	6.7%	0.0%	93.3%
TDF/3TC/EFV - 300/300mg/600mg - Tab	19.7%	12.7%	67.6%	7.5%	7.5%	85.0%
NVP - 10mg/ml - Susp	24.6%	12.3%	63.2%	9.7%	3.2%	87.1%
mRDT	31.6%	0.0%	68.4%	17.2%	10.3%	72.4%

## Emergency order

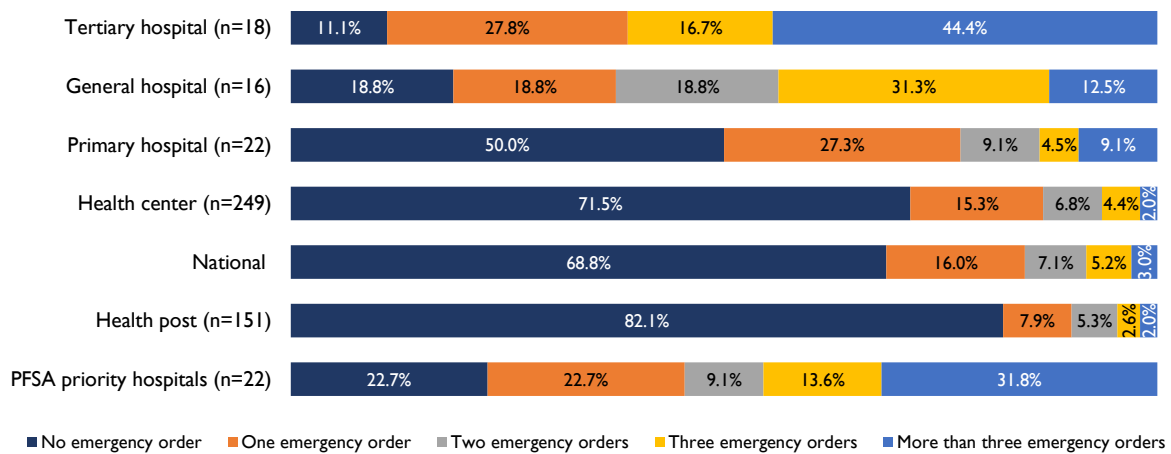
### Frequency of emergency order

IPLS is designed as a minimum-maximum inventory control system to ensure that health facilities and hubs always have enough stock to serve their clients and to avoid placing emergency orders.



However, when the stock on hand drops below the established emergency order point—two weeks for hospitals and health centers, and one week for health posts—IPLS recommends placing emergency orders to avoid stock-outs.

The number of emergency orders placed by health facilities within the six months preceding the survey was assessed. Higher level facilities are more likely to have placed an emergency order than lower level ones. The percentage of facilities that had placed an emergency order (any) were 88.9%, 81.4%, and 50.0% for tertiary, general, and primary hospitals respectively. Only 28.5% of health centers and 17.8% of health posts had placed an emergency order (any). On average 31.3% hospitals and health centers, had an emergency order (any) in the 6 months preceding the survey (Figure 54).



**Figure 54: Percent of facilities placing emergency orders over previous six months, by type of facility**

It is worth noting, while resorting to emergency ordering is generally discouraged, less frequent emergency ordering does not necessarily indicate better stock management. It is possible one of the reasons lower level facilities place emergency orders less frequently is because it is more difficult for them to place orders and/or they may not have the means to collect orders (in general EPSA do not have the capacity to deliver emergency orders).

### Means of placing emergency orders

Emergency orders are supposed to be placed using RRF and HPMRR even though health facility staff can also use other means of communications to expedite the process. The means through which health facilities had placed emergency orders in the six months preceding the survey were examined.

Health facilities heavily relied on letters to place their emergency orders instead of RRF and HPMRR: 66.7% of tertiary hospitals, 62.5% of general hospitals, 40.9% of primary hospitals, 59.1% of EPSA priority hospitals, 18.5% of health centers, and 8.6% of health posts placed orders using letters. Use of RRF or HPMRR was very low, however, hospitals had better utilization of RRF as

compared to health centers. In-person orders were also reported yet confined to a few health centers and health posts. Figure 55 below shows the details on the means of communication used to place emergency orders by health facility level.

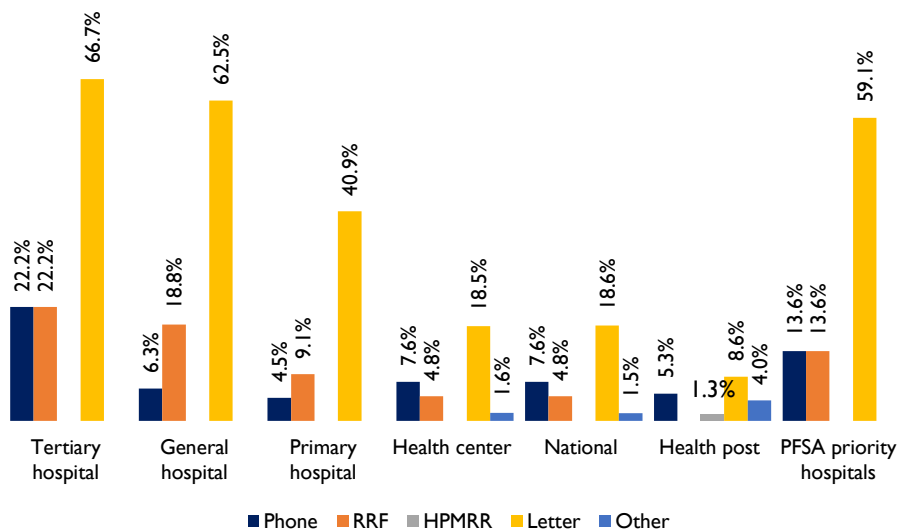


Figure 55: Means of placing an emergency order

### Wastage

Wastage rate – defined as the value of commodities wasted (expired, damaged and/or lost) over a year divided by the sum of the value of commodities on hand at the beginning of the year and value of commodities received during the year – was examined for electronic health facilities. Paper base sites were not considered for this indicator, as there is no proper tracking and documentation of wastage at these facilities. The assessment was done separately for RDF and program commodities and by year for the last three Ethiopian Fiscal years<sup>16</sup>.

Analysis of data from the three years shows that wastage of RDF products was lower than program products for facilities. Figure 56 shows the average wastage rate by RDF and program products for the past three Ethiopian Fiscal years (EFY): 2014/15, 2015/16, and 2016/17.

<sup>16</sup> The Ethiopian Fiscal Year (EFY) runs from about mid-July; however western calendar years are shown

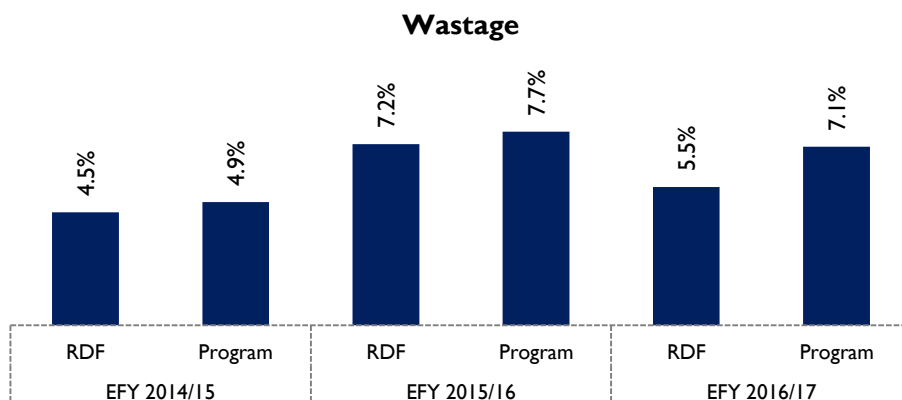


Figure 56: Wastage

### Inventory turnover

Inventory turnover measures how many times in a year inventory is sold or distributed, and is an important measure of supply chain efficiency. Turnover for both RDF and program items was calculated for automated facilities by dividing total value of products distributed by average value of inventory managed over a one year period (Figure 57). Generally, program products had higher turnover over than RDF over the three Ethiopian fiscal years considered (2014/15, 2015/16, and 2016/17). Since facilities usually have to pay for RDF items (program items are free) one would expect a higher turnover for these items but that is not the case. Turnover, however, seemed to improve over the three years for RDF and program items.

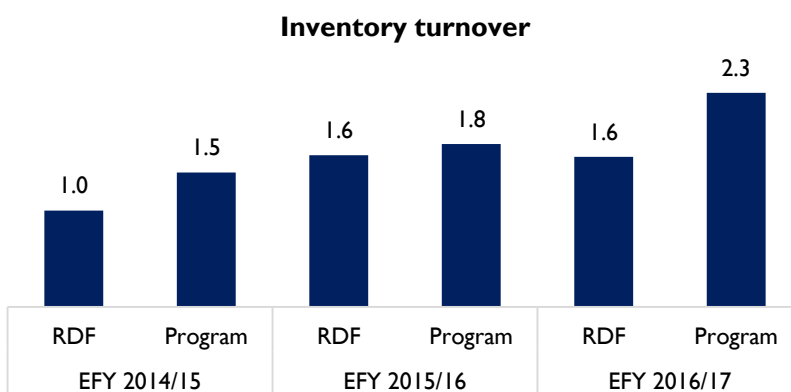


Figure 57: Inventory turnover at health facilities

Generally, inventory turnover is lower than desired at facilities– if we assume a maximum stock level of 4 MOS at facilities then inventory turnover should be 3 but the highest turnover seen is 2.3.

## EPSA Share in Product Supply

In the three Ethiopian fiscal years preceding the survey (2014/15, 2015/16, and 2016/17), most products were supplied by EPSA, whether RDF or program. EPSA had a higher share in program products supplied, by value, as compared to RDF products. In all the years, EPSA's share by value stood at more than 90.0%. Over the years, the share of EPSA in RDF has shown a consistent decline – from 86.7% in 2014/15 to 83.3% in 2016/17 and to 77.4% in 2015/16. It should be noted that the finding is in electronic sites.

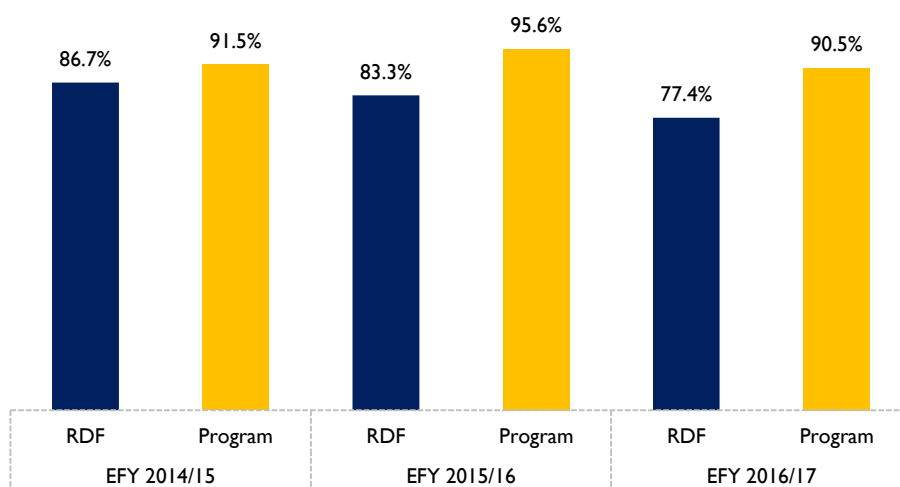


Figure 58: EPESA share in total supply

## Order Fill Rate

Order fill rate is an important measure of customer satisfaction and supply chain performance.

### Perceived Fill Rate

The survey attempted to assess the perceptions of facility staff on the timeliness and the resupply of products as per their request. Respondents were asked if they received what they ordered always, most of the time etc. for various program items. The responses are likely highly subjective. As can be seen from Table 21, the perceived order fill rate for program products was better than for RDF products. For program commodities, on average, 89.7% of Hospitals and 88.0% of Health Centers reported receiving the quantity they ordered most of the time. Whereas for RDF products, 34 percent of hospitals and 45.4 percent of health centers reporting receiving the quantity requested most of the time. On program items, perceived order fill rates were lower for MNCH items than for any other program. These items are only now being integrated into the IPLS, and may still be supplied based on predetermined allocations (push).

**Table 21: Perceived Order Fill Rate by a program, and facility level**

<b>Program</b>	<b>Perceived order fill rate</b>	<b>Hospital</b>	<b>Health center</b>	<b>Health post</b>
ART	Always (> 80%)	74.5%	83.3%	-
	Most of the time (60-80%)	21.8%	16.7%	-
	Rarely (40-60%)	3.6%	0.0%	-
	Never (< 40%)	0.0%	0.0%	-
RTK (HIV)	Always (> 80%)	64.3%	56.7%	-
	Most of the time (60-80%)	16.1%	21.6%	-
	Rarely (40-60%)	14.3%	15.5%	-
	Never (< 40%)	5.4%	6.1%	-
TB	Always (> 80%)	80.0%	75.6%	83.5%
	Most of the time (60-80%)	14.5%	15.9%	6.3%
	Rarely (40-60%)	5.5%	6.5%	3.8%
	Never (< 40%)	0.0%	2.0%	6.3%
FP	Always (> 80%)	89.3%	72.7%	82.9%
	Most of the time (60-80%)	7.1%	18.9%	13.7%
	Rarely (40-60%)	0.0%	8.0%	3.4%
	Never (< 40%)	3.6%	0.4%	0.0%
Malaria	Always (> 80%)	65.5%	72.9%	77.3%
	Most of the time (60-80%)	25.5%	14.8%	13.4%
	Rarely (40-60%)	3.6%	9.7%	6.7%
	Never (< 40%)	5.5%	2.5%	2.5%
MNCH	Always (> 80%)	48.1%	50.8%	66.2%
	Most of the time (60-80%)	31.5%	28.2%	17.6%
	Rarely (40-60%)	14.8%	14.1%	12.7%
	Never (< 40%)	5.6%	6.9%	3.5%
RDF (Budget)	Always (> 80%)	5.4%	13.3%	-
	Most of the time (60-80%)	28.6%	32.1%	-
	Rarely (40-60%)	44.6%	41.4%	-
	Never (< 40%)	21.4%	13.3%	-

### Order Fill Rate for Selected Products

The survey, in addition to assessing the respondents' perception about resupply, also reviewed facility records to determine actual fill rates. To calculate this, the most recent quantity ordered from the RRF 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 in full. 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 order fill rate was less than 50 percent, both at hospitals and health centers with rates for certain items much less (less than 10% for ceftriaxone). At health centers, the highest percentages were 81.1%, for both mRDT and pentavalent vaccine and 61.5 % for AZT/3TC/EFV (300mg/300mg/600mg). At hospitals, the highest order fill rate was 81.0% for Pentavalent vaccine 70.3% for TDF/3TC/EFV (300/300mg/600mg), and 70.0% for Medroxyprogesterone-150mg/ml (70.0%)

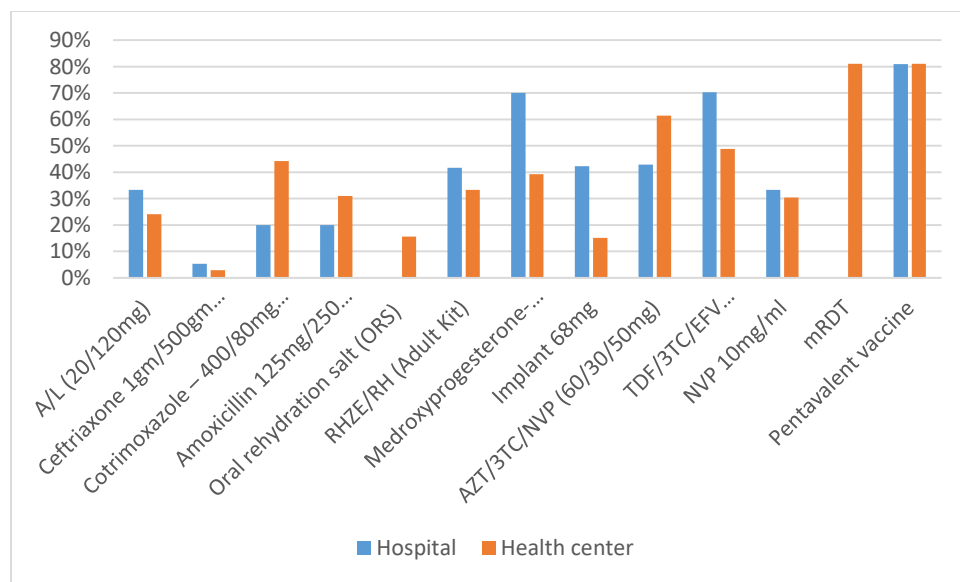


Figure 59: Order Fill Rate for selected products, at health centers and hospitals

### Delivery Lead Time

IPLS SOPs recommend that, for program commodities, the delivery lead time to be one month. This was assessed by comparing the reporting date from the RRF against the corresponding receipt date in the Model 19/STV for the most recent period. This indicator indirectly measures

the responsiveness of the system or on-time delivery. On time delivery to hospitals (72.2%) was better than to health centers (44.4%) which may be due to easier accessibility.

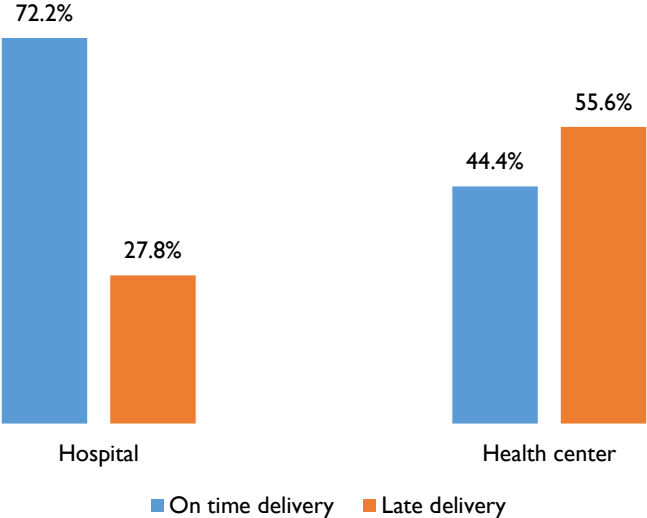


Figure 60: Percent on time delivery for the most recent period before the survey, hospitals and health centers

## Conclusions and Recommendations

*While the availability of IPLS forms for all levels has improved since 2015, challenges remain particularly at health post level: only 59% of health posts had blank bin cards (an increase from 40% in 2015). Use of bin cards was even lower – the average use of bin cards for tracer items was 90% at hospitals, 55% at health centers and only 27% at health posts. If bin cards— the fundamental record keeping tool under IPLS— are not being used, then IPLS has a long way to go to become a national system.*

Particular focus is needed for stock management at health posts. For almost every IPLS indicator, unsurprisingly, performance at health post level is poorer than at higher levels. For example, the use of bin cards is only 27% at health posts versus 55% at health centers; between 68% and 81% of bin cards at health centers were up-to-date, while for health posts the range was 55% to 65%; while bin card accuracy was in the range 42%-79% for health centers but only 33-56% for health posts. Availability of tracer items was, in almost every case, lower at health posts than at health centers. Most of the attention on strengthening the supply chain continues to focus on higher levels and there is little investment in the last mile supply chain. Hence, the FMOH should enforce continuous support to enhance stock management at health post level.

*At health facilities, vaccines are managed separately from other items and, in general, inventory management is much weaker for vaccines than for IPLS items. Availability and use of stock keeping tools for vaccines is, generally speaking, lower than for IPLS commodities: for example, only 69% of health centers and hospitals had a VR, of those only 58% were using it (defined as an entry over the past six months), and of those using it only 63% were up-to-date and only 14% of VLs were accurate (41% had accurate or near accurate). VRFs for reporting and ordering vaccines were only available in 39% of health centers and of those only 34% were actually using them; the corresponding figures for the RRF were 85% and 83% respectively. A factor here may be that while IPLS formats are regularly printed centrally and distributed by EPSA, this normally does not happen for vaccine forms (VRFs were printed centrally and distributed in 2018 for the very first time). Facilities are expected to print forms when they need them resulting in a lack of standardization as the forms become modified or are simply not used. Another factor that should be looked at is form design. The VRF is complex, with many fields, and much harder to complete than the RRF. An interesting question would be if the amount of data required in the VRF actually means facilities are less likely to submit it?*

There are still shortages of pharmacy professionals working in the health sector. Despite major efforts to train more pharmacy professionals (both pharmacists and pharmacy technicians), 15% of health facilities (all of the health centers) had no pharmacy professionals on their staff. This is



concerning and deserves more research to identify root causes. Nonpharmacy professionals do not receive any pre service training in commodity management, and are not a priority for IST.

*Training gaps in supply chain management remain:* While significant investments have been made in training on IPLS and commodity management (in service, pre-service and recently online training), for a variety of reasons (service expansion, staff turnover) gaps remain. Nearly 24% of hospitals and health centers had no IPLS trained staff on their pharmacy units with in-service training remaining the most common training modality (96%). At health posts, less than 10% of HEWs reported receiving informal OJT IPLS training, while 1% reported receiving preservice training. In-service training has been recently institutionalized for new HEW and the expectation is that this percentage will increase with time. Responsible stakeholders need to intensify the current capacity building mechanisms such as pre services training, online training, and in service trainings.

*Storage conditions remain a major challenge for IPLS.* While sampling and methodological changes make it difficult for a valid comparison between the 2015 and 2018 surveys, the trends are concerning: while the percent of hospitals with acceptable storage conditions (meet 80% of criteria) increased from 43% to 71%, the percent of health centers declined from 63% to 45%; while the percent of health posts remained essentially unchanged from 29% to 27%. It does appear storage conditions at hospitals are receiving more attention than at health centers.

*Cold chain conditions are a deep concern:* only 65% of health centers had a functional refrigerator (97% had a refrigerator so nearly 1/3 health centers had a non-functioning refrigerator). Given that all health centers dispense vaccines, and many health posts rely on the cold chain at their associated health center (only 18% of health posts had a functional refrigerator. The rest pick up and return vaccines to their health center. This suggests the weak link in the cold chain is at the facility level and that maintenance and repairs needs strengthening.

*Direct delivery has not progressed:* Direct delivery of program commodities to facilities was one of the successes of IPLS. Currently, EPSA delivers to “accessible health facilities (those on “major routes” and, for the remainder, to their woreda. The representative sample of health centers and hospitals surveyed showed just under half received direct delivery of program items (the exception is ART commodities since ART is typically offered in larger facilities, 96% of facilities offering ART have these delivered). For all other programs, just over half must go to their Woredas to collect medication. This is inefficient and pulls health staff away from their main role of providing healthcare. EPSA is currently considering increasing direct delivery from bimonthly to monthly delivery – while this will increase efficiency, consideration must be made for expanding direct delivery to more health centers and the resources this will require.

*Health Extension Workers are still walking:* More than half (54%) of health posts reported “on foot” as their main source of transport for health commodities. Another 16% cited public transport, and 4% animals, but less than 1% used bicycles. While HEWS do collect supplies during routine visits to health centers, there is a need for more analysis to assess the burden on HEWs having to collect supplies and if there are steps that can be taken to support them.

*Medicine availability is the ultimate indicator of supply chain performance.* Overall availability of most tracer items declined from the last survey (16 of 19 items). The decline was driven by a drop in availability at health centers – at hospitals, availability of most items actually improved. These findings raise a number of important issues. Firstly, availability of 79% for a basket of tracer items is concerning and shows more work is needed to strengthen the supply chain. A well-functioning LMIS capable of providing either live or periodic inventory data would allow for a more reliable estimate of average availability and system performance. Of course, visibility of availability at facilities helps to not just measure performance but also helps directly improve performance. EPSA is working to improve data visibility from health facility level

*Medicine availability is not the only problem:* overstocking is also a problem. The majority of health centers were overstocked for 10 of 13 items and hospitals for 9 of 12. This may be partly due to concerns about stock outs leading facilities to order more than they need. Overall this contributes to an inefficient supply chain with resources tied up in slow-moving inventory, risk of expiry, and large storage areas needed to store excessive amounts of product. Automation seemed to have some impact here with 16% of items at automated sites stocked optimally versus only 9% of items at site managed using paper systems. Low inventory turns also point to an inefficient system.

While inventory turnover seemed to improve over the three years of data examined (from 1 to 1.6 for RDF items, and 1.5 to 2.3 for program items), in all cases it remains less than optimal. Such low inventory turnover (an inventory turn of 2 means the location has six months of stock at any moment) point to large dollar amounts tied up in inventory and an inefficient system, likely exacerbated by fear of stock outs in a vicious cycle: levels over-order items because of fears of stock outs resulting in less funding for other items impacting availability and leading to more over-ordering. Low order fill rates (less than 50% or most items) is another symptom of an inefficient system that further perpetuates the problem. Facilities over order, don't get what they order, and so they keep over-ordering, leading to both stock outs and overstocks.

To fix this problem will require a holistic effort that incorporates increased data visibility, systematic performance monitoring that includes KPIs that go beyond availability to include efficiency related KPIs like inventory turns, and order fill rate. Increased supply chain velocity—the

time it takes for products to move through the supply chain from purchase to customers' hands—will lead to a more responsive and efficient system, with fewer resources tied up in inventory. Other strategies EPSA should assess include ways to shorten procurement lead times, shorter distribution cycles (for example moving from the current bimonthly hub to facility distribution to monthly).

## Annex 1: Result Tables

Table 22: Tracer products and Abbreviated names

Tracer products	Abbreviated Name
Amoxicillin 500mg + 250mg	Amox - 250mg/500mg -Tab
Artemether+lumefantrine (20mg+120mg) - [Tablet]	Alu(any presentation)-Tab
Ceftriaxone 1gm + 500mg injection	Ceft-0.5gm/1gm- inj
Ciprofloxacin 500mg + 250mg	Cipro-250mg/500mg -Tab
Sulphamethoxazole - Trimethoprim – 800mg/160mg + 400mg/80mg	Cotri -480mg/960mg -Tab
Amoxicillin 125/250 mg dispersible tablet + Amoxicillin 125 mg/5ml suspension	Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp
Ringer's Lactate (500ml or 1000 ml) Solution - [Bag]	RL-500ml/1000 ml-Solution
Gentamycin 20mg/ml-2ml and 10mg/ml-2ml injection - [Ampoule]	Gent -20mg/ml or Gent-10mg/ml-Inj
Gentamycin 80mg/ml + 40mg/ml injection	Gent-80mg/ml or 40mg/ml -Inj
Mebendazole 100 mg + Albendazole 400 mg + Mebendazole suspesion + Albendazole suspesion	Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb -Susp
Oral rehydration salt (ORS) - [Sachet]	ORS-Sachet
Oxytocin 10 units/ml in 0.5ml/1-ml injection - [Ampoule]	Oxytocin-Inj
Paracetamol 125mg suppository + 120mg/5ml, syrup	Paracetamol -Supp/syrup
RHZE (Rifampicin + Isoniazid + Pyrazinamide + Ethambutol) + RH (Rifampicin + Isoniazide) - (150mg+75mg+400mg+275mg) of 6x28 tablets + (150mg+75mg) of 12x28 Tablets - [Kit]	RHZE/RH -Kit
Medroxyprogesterone Acetate - 150mg/ml in 1ml, Injection - [Vial]	Medroxy - Injection
Tetracycline - 1% - Eye Ointment 4/5g - [Tube]	TTC- Eye Oint
Implant 68mg implant (Implanon) - [Each]	Implanon
Lamivudine/Zidovudine/Nevirapine (30mg + 60mg + 50mg) of 60 tablets - [Pack]	AZT/3TC/NVP - 60/30/50mg -Tab
TDF/Lamivudine/Efavirenz (300mg + 150mg + 600mg) of 30 tablets - [Pack]	TDF/3TC/EFV - 300/150/600mg -Tab
Nevirapine 10mg/ml oral suspension - [Bottle]	NVP- 10mg/ml-Susp
Ferrous sulphate with folic acid tab ( FeFol) - [Tablet]	FeFol -Tab
Magnesium Sulphate 50% in 20ml injection - [Ampoule]	MgSO4 - Inj
Hydrochlorothiazide 25mg - [Tablet]	HCT- 25mg-Tab
Metformin 500mg tab - [Tablet]	Met- 500mg- Tab
Diazepam 5mg injection - [Ampoule]	Diazepam-5mg-Inj
Adrenaline (Epinephrine) 0.1%, 1 ml injection - [Ampoule]	Adrenaline-Inj
Amitriptyline 25mg tab - [Tab]	Amitriptyline-25mg-Tab
HIV RTK for screening (Bejing wantie - recent/First Response - previous) - [Each]	HIV RTK Screening
Rapid diagnostic test kit for Malaria (mRDT) - [Each]	mRDT
Urine dipstick - [Each]	Urine dipstick
Blood lancet - [Each]	Blood lancet
Blood glucose test strip - [Each]	Blood glucose test strip
Nifedipine 20mg tablet - [Tab]	Nifedipine -20mg-Tab
Morphine 10mg/ml injection any volume - [Ampoule]	Morphine -10mg/ml- Inj
Cyclophosphamide 1g + 500mg powder for injection	Cyclophosphamide-0.5gm/ 1gm-Inj
Giemsa stain solution - [Bottle]	Giemsa stain solution

Table 23: Use of bin card by item and facility type

	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals	National	All Hospitals	Weighted average
Amox - 250mg/500mg -Tab	94.4%	100.0%	95.5%	78.4%	-	95.2%	79.8%	96.4%	82.3%
Alu (any presentation)-Tab	88.2%	100.0%	81.0%	55.5%	30.8%	89.5%	57.9%	88.7%	59.3%
Ceft-0.5gm/1gm- inj	88.9%	100.0%	95.5%	71.2%	-	90.5%	73.1%	94.6%	75.9%
Cipro-250mg/500mg -Tab	100.0%	100.0%	86.4%	77.7%	-	100.0%	78.7%	94.5%	82.8%
Cotri -480mg/960mg -Tab	94.4%	93.8%	81.8%	61.6%	-	95.2%	63.4%	89.3%	70.3%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	86.7%	100.0%	92.3%	53.9%	30.7%	88.2%	55.7%	92.3%	55.2%
RL-500ml/1000 ml-Solution	94.1%	93.8%	68.2%	52.3%	-	95.2%	53.9%	83.6%	64.5%
Gent -20mg/ml or Gent-10mg/ml-Inj	66.7%	100.0%	85.7%	41.1%	22.2%	66.7%	42.9%	83.3%	40.1%
Gent-80mg/ml or 40mg/ml -Inj	94.4%	100.0%	81.0%	61.5%	14.3%	95.2%	63.7%	90.9%	70.1%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb - Susp	88.9%	93.8%	81.8%	57.8%	25.5%	85.7%	59.9%	87.5%	58.9%
ORS-Sachet	-	-	77.3%	56.8%	27.5%	-	57.7%	77.3%	45.7%
Oxytocin-Inj	83.3%	93.8%	63.6%	19.4%	-	90.5%	23.1%	78.6%	54.9%
Paracetamol -Supp/syrup	94.4%	100.0%	86.4%	53.8%	18.8%	95.0%	56.8%	92.7%	61.6%
RHZE/RH -Kit	94.1%	93.8%	85.7%	55.9%	-	95.0%	58.2%	90.7%	66.7%
Medroxy - Injection	94.4%	81.3%	81.0%	53.2%	34.3%	85.7%	55.3%	85.5%	55.9%
TTC- Eye Oint	-	-	72.7%	49.6%	22.0%	-	49.3%	72.7%	40.0%
Implanon	82.4%	93.8%	81.0%	50.4%	26.2%	90.5%	52.5%	85.2%	55.6%
AZT/3TC/NVP - 60/30/50mg -Tab	100.0%	92.9%	75.0%	64.7%	-	100.0%	68.2%	88.2%	82.6%
TDF/3TC/EFV - 300/150/600mg -Tab	100.0%	100.0%	81.0%	63.0%	-	100.0%	66.3%	92.6%	77.8%
NVP- 10mg/ml-Susp	94.4%	100.0%	72.7%	54.8%	-	95.2%	58.9%	87.5%	71.8%
FeFol -Tab	93.8%	80.0%	66.7%	51.6%	27.6%	88.9%	53.1%	78.8%	55.2%
MgSO4 - Inj	88.9%	93.8%	72.7%	39.7%	-	90.5%	42.9%	83.9%	58.1%
HCT- 25mg-Tab	100.0%	93.8%	81.8%	47.2%	-	100.0%	50.8%	91.1%	67.3%
Met- 500mg- Tab	94.1%	100.0%	71.4%	48.5%	-	95.0%	55.5%	87.0%	75.8%
Diazepam-5mg-Inj	94.4%	93.8%	66.7%	33.3%	-	95.2%	37.5%	83.6%	61.8%
Adrenaline-Inj	100.0%	93.8%	77.3%	42.6%	-	100.0%	45.6%	89.3%	62.4%
Amitriptyline-25mg-Tab	100.0%	93.8%	90.5%	37.2%	-	100.0%	46.1%	94.5%	74.7%
RTK Screening	83.3%	81.3%	81.8%	39.4%	-	81.0%	42.3%	82.1%	53.3%
mRDT	-	-	-	46.8%	23.2%	-	46.7%	-	41.7%
Urine dipstick	72.2%	81.3%	86.4%	29.9%	-	71.4%	34.8%	80.4%	48.4%
Blood lancet	82.4%	73.3%	86.4%	30.4%	-	76.2%	34.5%	81.5%	49.3%
Blood glucose test strip	72.2%	75.0%	77.3%	23.9%	-	71.4%	30.1%	75.0%	50.9%
Nifedipine -20mg-Tab	94.4%	93.8%	-	-	-	95.2%	91.1%	94.1%	95.2%
Morphine -10mg/ml- Inj	94.4%	75.0%	-	-	-	94.7%	70.5%	88.5%	94.7%
Cyclophosphamide-0.5gm/ 1gm-Inj	100.0%	-	-	-	-	100.0%	100.0%	100.0%	100.0%
<b>Weighted average</b>				54.6%	27.3%			89.5%	62.8%

Table 24: Facilities where bin cards are updated by product and facility type

Product	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals	National	All Hospitals	Weighted average
Amox - 250mg/500mg -Tab	76.5%	93.8%	90.5%	75.8%	-	75.0%	77.3%	87.0%	75.6%
Alu(any presentation)-Tab	93.3%	86.7%	88.2%	73.0%	57.6%	88.2%	74.7%	89.4%	75.3%
Ceft-0.5gm/1gm- inj	75.0%	87.5%	81.0%	71.1%	-	68.4%	72.6%	81.1%	70.4%
Cipro-250mg/500mg -Tab	64.7%	93.8%	89.5%	71.3%	-	71.4%	72.6%	82.7%	71.4%
Cotri -480mg/960mg -Tab	88.2%	93.3%	88.9%	67.6%	-	85.0%	70.2%	90.0%	73.2%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	76.9%	81.8%	75.0%	71.0%	54.8%	73.3%	72.2%	77.8%	68.8%
RL-500ml/1000 ml-Solution	62.5%	93.3%	80.0%	68.1%	-	65.0%	70.2%	78.3%	67.1%

Gent -20mg/ml or Gent-10mg/ml-Inj	50.0%	100.0%	83.3%	75.5%	66.7%	50.0%	76.4%	80.0%	70.3%
Gent-80mg/ml or 40mg/ml -Inj	76.5%	87.5%	88.2%	67.5%	75.0%	75.0%	70.1%	84.0%	70.2%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb - Susp	81.3%	86.7%	94.4%	63.4%	51.4%	77.8%	67.3%	87.8%	66.2%
ORS-Sachet	-	-	76.5%	68.4%	59.0%	-	68.9%	76.5%	59.7%
Oxytocin-Inj	80.0%	86.7%	92.9%	77.3%	-	78.9%	80.0%	86.4%	78.2%
Paracetamol -Supp/syrup	82.4%	93.3%	89.5%	70.0%	72.2%	84.2%	72.4%	88.2%	74.7%
RHZE/RH -Kit	81.3%	86.7%	83.3%	74.8%	-	78.9%	76.2%	83.7%	76.1%
Medroxy - Injection	76.5%	69.2%	76.5%	72.8%	61.2%	61.1%	74.1%	74.5%	68.0%
TTC- Eye Oint	-	-	87.5%	75.0%	45.8%	-	75.2%	87.5%	62.4%
Implanon	71.4%	66.7%	76.5%	70.3%	64.7%	63.2%	71.0%	71.7%	67.7%
AZT/3TC/NVP - 60/30/50mg -Tab	58.8%	92.3%	93.3%	77.3%	-	61.1%	80.1%	80.0%	69.0%
TDF/3TC/EFV - 300/150/600mg -Tab	72.2%	86.7%	88.2%	77.3%	-	81.0%	78.3%	82.0%	78.8%
NVP- 10mg/ml-Susp	76.5%	81.3%	87.5%	77.9%	-	70.0%	80.2%	81.6%	74.5%
FeFol -Tab	73.3%	75.0%	85.7%	73.9%	48.6%	68.8%	75.1%	78.0%	69.5%
MgSO4 - Inj	93.8%	100.0%	87.5%	65.1%	-	100.0%	68.9%	93.6%	80.7%
HCT- 25mg-Tab	77.8%	93.3%	83.3%	77.1%	-	76.2%	78.8%	84.3%	76.7%
Met- 500mg- Tab	87.5%	100.0%	93.3%	66.7%	-	89.5%	75.7%	93.6%	81.9%
Diazepam-5mg-Inj	94.1%	93.3%	85.7%	74.1%	-	90.0%	77.8%	91.3%	82.2%
Adrenaline-Inj	77.8%	80.0%	82.4%	66.3%	-	76.2%	68.5%	80.0%	70.2%
Amitriptyline-25mg-Tab	77.8%	93.3%	94.7%	68.6%	-	76.2%	77.5%	88.5%	73.6%
RTK Screening	93.3%	92.3%	88.9%	75.8%	-	88.2%	78.0%	91.3%	80.5%
mRDT	-	-	-	81.1%	61.5%	-	81.0%	-	77.7%
Urine dipstick	92.3%	84.6%	84.2%	69.6%	-	86.7%	73.3%	86.7%	78.2%
Blood lancet	85.7%	90.9%	73.7%	61.9%	-	87.5%	65.2%	81.8%	74.2%
Blood glucose test strip	100.0%	66.7%	82.4%	68.8%	-	80.0%	73.8%	83.3%	75.7%
Nifedipine -20mg-Tab	88.2%	100.0%	-	-	-	90.0%	97.8%	93.8%	90.0%
Morphine -10mg/ml- Inj	52.9%	83.3%	-	-	-	55.6%	60.5%	60.9%	55.6%
Cyclophosphamide-0.5gm/ 1gm-Inj	87.5%	-	-	-	-	83.3%	93.3%	87.5%	83.3%
<b>Weighted average</b>				<b>71.8%</b>	<b>58.8%</b>			<b>76.4%</b>	<b>72.6%</b>

Table 25: Bin card use electronic Vs paper based

	Tertiary hospital	General hospital	Primary hospital	Health center	National	EPSA priority hospitals	All Hospitals
eLECTRONIC	100%	100%	100%	87.0%	89.7%	100%	100%
Paper based	100%	100%	88%	80.8%	81.2%	100%	90%

Table 26: Facilities with bin card accuracy by product and facility type

Product	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals	National	All Hospitals	Weighted average
Amox - 250mg/500mg -Tab	70.6%	43.8%	66.7%	51.6%	-	47.6%	53.1%	61.1%	50.6%
Alu(any presentation)-Tab	53.3%	46.7%	47.1%	45.1%	42.4%	38.9%	45.9%	48.9%	43.1%
Ceft-0.5gm/1gm- inj	56.3%	62.5%	57.1%	56.6%	-	45.0%	57.5%	58.5%	53.7%
Cipro-250mg/500mg -Tab	64.7%	56.3%	57.9%	51.1%	-	59.1%	51.6%	59.6%	53.1%
Cotri -480mg/960mg -Tab	52.9%	53.3%	83.3%	53.1%	-	52.4%	55.6%	64.0%	52.9%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	61.5%	45.5%	66.7%	48.4%	35.7%	62.5%	49.0%	58.3%	49.5%
RL-500ml/1000 ml-Solution	50.0%	53.3%	73.3%	54.3%	-	42.9%	56.4%	58.7%	50.9%
Gent -20mg/ml or Gent-10mg/ml-Inj	100.0%	100.0%	50.0%	73.6%	72.2%	100.0%	72.6%	70.0%	76.4%
Gent-80mg/ml or 40mg/ml -Inj	64.7%	81.3%	82.4%	65.8%	75.0%	66.7%	67.7%	76.0%	66.3%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb - Susp	62.5%	66.7%	66.7%	56.7%	22.9%	63.2%	58.3%	65.3%	56.2%
ORS-Sachet	-	-	58.8%	44.4%	33.3%	-	44.8%	58.8%	37.2%
Oxytocin-Inj	60.0%	46.7%	50.0%	70.5%	-	40.0%	66.8%	52.3%	57.5%
Paracetamol -Supp/syrup	58.8%	53.3%	84.2%	61.7%	61.1%	50.0%	63.7%	66.7%	58.3%
RHZE/RH -Kit	43.8%	73.3%	66.7%	67.2%	-	45.0%	67.5%	61.2%	61.4%

Medroxy - Injection	58.8%	69.2%	58.8%	42.4%	32.7%	57.9%	44.8%	61.7%	45.4%
TTC- Eye Oint	-	-	68.8%	55.4%	29.2%	-	55.5%	68.8%	45.5%
Implanon	50.0%	46.7%	70.6%	50.0%	55.9%	45.0%	51.9%	56.5%	49.8%
AZT/3TC/NVP - 60/30/50mg -Tab	29.4%	53.8%	53.3%	68.2%	-	36.8%	63.8%	44.4%	55.6%
TDF/3TC/EFV - 300/150/600mg -Tab	38.9%	33.3%	58.8%	60.0%	-	27.3%	58.7%	44.0%	49.3%
NVP- 10mg/ml-Susp	58.8%	87.5%	75.0%	79.4%	-	61.9%	80.0%	73.5%	72.4%
FeFol -Tab	53.3%	75.0%	85.7%	55.7%	51.4%	52.9%	58.2%	70.7%	54.3%
MgSO4 - Inj	43.8%	53.3%	87.5%	66.3%	-	35.0%	68.5%	61.7%	55.5%
HCT- 25mg-Tab	50.0%	73.3%	66.7%	66.3%	-	50.0%	67.5%	62.7%	60.3%
Met- 500mg- Tab	56.3%	56.3%	73.3%	63.6%	-	50.0%	66.0%	61.7%	55.7%
Diazepam-5mg-Inj	52.9%	73.3%	64.3%	88.9%	-	57.1%	84.4%	63.0%	76.9%
Adrenaline-Inj	33.3%	46.7%	64.7%	68.4%	-	27.3%	67.0%	48.0%	57.3%
Amitriptyline-25mg-Tab	44.4%	73.3%	78.9%	88.6%	-	45.5%	86.1%	65.4%	66.0%
RTK Screening	46.7%	69.2%	66.7%	59.3%	-	38.9%	60.7%	60.9%	52.4%
mRDT	-	-	-	54.7%	34.6%	-	54.4%	-	51.8%
Urine dipstick	61.5%	61.5%	68.4%	66.1%	-	56.3%	66.0%	64.4%	61.8%
Blood lancet	50.0%	63.6%	68.4%	46.0%	-	47.1%	50.3%	61.4%	46.5%
Blood glucose test strip	84.6%	41.7%	76.5%	59.4%	-	62.5%	63.9%	69.0%	61.3%
Nifedipine -20mg-Tab	52.9%	60.0%	-	-	-	61.9%	55.9%	56.3%	61.9%
Morphine -10mg/ml- Inj	35.3%	66.7%	-	-	-	42.1%	36.4%	43.5%	42.1%
Cyclophosphamide-0.5gm/ 1gm-Inj	62.5%	-	-	-	-	57.1%	81.3%	62.5%	57.1%
<b>Weighted average</b>				<b>59.4%</b>	<b>45.3%</b>			<b>49%</b>	<b>55.5%</b>

Table 27: Near bin card accuracy for all tracer products by facility types

Product	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals	National	All Hospitals	Weighted average
Amox - 250mg/500mg -Tab	70.6%	68.8%	71.4%	62.1%	-	61.9%	63.1%	70.4%	62.0%
Alu(any presentation)-Tab	53.3%	46.7%	47.1%	49.2%	51.5%	38.9%	49.5%	48.9%	47.2%
Ceft-0.5gm/1gm- inj	75.0%	68.8%	76.2%	66.9%	-	65.0%	67.9%	73.6%	66.4%
Cipro-250mg/500mg -Tab	82.4%	75.0%	78.9%	61.2%	-	81.8%	62.2%	78.8%	66.9%
Cotri -480mg/960mg -Tab	58.8%	53.3%	83.3%	58.7%	-	57.1%	60.6%	66.0%	58.3%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	76.9%	72.7%	66.7%	54.8%	47.6%	81.3%	55.8%	72.2%	59.6%
RL-500ml/1000 ml-Solution	68.8%	60.0%	73.3%	63.8%	-	61.9%	65.1%	67.4%	63.2%
Gent -20mg/ml or Gent-10mg/ml-Inj	100.0%	100.0%	50.0%	75.5%	77.8%	100.0%	74.3%	70.0%	78.8%
Gent-80mg/ml or 40mg/ml -Inj	70.6%	87.5%	88.2%	73.3%	75.0%	71.4%	75.3%	82.0%	72.8%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb -Susp	75.0%	66.7%	77.8%	63.4%	31.4%	73.7%	65.3%	73.5%	63.6%
ORS-Sachet	-	-	70.6%	55.6%	53.8%	-	56.3%	70.6%	49.0%
Oxytocin-Inj	73.3%	60.0%	57.1%	75.0%	-	60.0%	71.9%	63.6%	68.1%
Paracetamol -Supp/syrup	82.4%	60.0%	89.5%	65.0%	61.1%	75.0%	67.3%	78.4%	67.8%
RHZE/RH -Kit	56.3%	73.3%	72.2%	70.3%	-	55.0%	70.8%	67.3%	66.2%
Medroxy - Injection	70.6%	76.9%	76.5%	55.2%	42.9%	68.4%	57.7%	74.5%	56.8%
TTC- Eye Oint	-	-	68.8%	59.8%	41.7%	-	59.6%	68.8%	50.3%
Implanon	85.7%	60.0%	76.5%	53.4%	55.9%	80.0%	55.8%	73.9%	61.6%
AZT/3TC/NVP - 60/30/50mg -Tab	47.1%	69.2%	60.0%	72.7%	-	63.2%	68.7%	57.8%	68.4%
TDF/3TC/EFV - 300/150/600mg -Tab	44.4%	60.0%	58.8%	68.0%	-	45.5%	65.9%	54.0%	60.2%
NVP- 10mg/ml-Susp	64.7%	87.5%	75.0%	79.4%	-	66.7%	80.1%	75.5%	74.2%
FeFol -Tab	53.3%	91.7%	85.7%	61.7%	62.9%	58.8%	64.1%	75.6%	61.2%
MgSO4 - Inj	56.3%	53.3%	87.5%	67.5%	-	45.0%	69.7%	66.0%	59.5%
HCT- 25mg-Tab	66.7%	86.7%	72.2%	72.3%	-	68.2%	73.5%	74.5%	70.7%
Met- 500mg- Tab	62.5%	75.0%	80.0%	69.7%	-	60.0%	74.0%	72.3%	63.9%
Diazepam-5mg-Inj	82.4%	80.0%	64.3%	88.9%	-	85.7%	85.0%	76.1%	87.6%
Adrenaline-Inj	44.4%	60.0%	76.5%	75.8%	-	36.4%	75.1%	60.0%	64.2%
Amitriptyline-25mg-Tab	44.4%	80.0%	89.5%	88.6%	-	45.5%	88.5%	71.2%	65.1%
RTK Screening	66.7%	69.2%	72.2%	62.6%	-	55.6%	64.4%	69.6%	60.1%
mRDT	-	-	-	63.2%	50.0%	-	62.9%	-	60.8%
Urine dipstick	69.2%	69.2%	78.9%	67.9%	-	56.3%	70.5%	73.3%	62.5%
Blood lancet	50.0%	72.7%	84.2%	54.0%	-	47.1%	59.6%	70.5%	50.7%

Blood glucose test strip	84.6%	50.0%	76.5%	65.6%	-	62.5%	68.0%	71.4%	63.8%
Nifedipine -20mg-Tab	64.7%	60.0%	-	-	-	71.4%	58.1%	62.5%	71.4%
Morphine -10mg/ml- Inj	52.9%	83.3%	-	-	-	63.2%	45.5%	60.9%	63.2%
Cyclophosphamide-0.5gm/ 1gm-Inj	62.5%	-	-	-	-	57.1%	81.3%	62.5%	57.1%
<b>Weighted average</b>				65.2%	53.3%			61.5%	63.4

**Table 28: IFRR use in at least one and eighty percent of DUs by all facility type**

	Tertiary hospital (n=18)	General hospital (n=16)	Primary hospital (n=22)	Health center (n=249)	National (Excluding health post)	EPSA priority hospitals (N=22)	Hospital (n=56)
IFRR use in at least one DU	100.0%	100.0%	86.4%	64%	66%	100.0%	94.6%
IFRR use in at least 80 % of Dus	83.3%	93.8%	63.6%	43.8%	45.8%	81.8%	78.6%

**Table 29: IFRR Schedule adherence by DUs by all facility types**

	Tertiary hospital	General hospital	Primary hospital	Health center	National	EPSA priority hospitals	All hospitals
ART	66.7%	53.3%	46.7%	43%	45%	63.6%	56.3%
OPD	83.3%	73.3%	66.7%	50%	52%	81.8%	74.5%
TB	53.3%	42.9%	37.5%	32%	34%	38.9%	44.4%
FP	61.5%	42.9%	45.5%	40%	41%	50.0%	50.0%
MNCH	50.0%	53.8%	41.7%	34%	35%	55.6%	48.8%
LAB	66.7%	42.9%	50.0%	38%	39.4%	57.1%	54.0%

**Table 30: RRF completeness by program for all health facilities**

Programs	Tertiary hospital	General hospital	Primary hospital	Health center	National	EPSA priority hospitals	All Hospitals
ART	94.4%	100%	85.7%	89.2%	89.8%	95.5%	92.7%
TB	83%	94%	76.2%	83%	82.9%	86%	84%
FP	88.9%	93.8%	85.7%	81.6%	82.2%	90.9%	89.1%
Malaria	77.8%	68.8%	85.7%	72.9%	74.1%	63.6%	78.2%
MNCH	66.7%	68.8%	81.0%	61.4%	62.6%	59.1%	72.7%
Total	55.6%	62.5%	57.1%	45.4%	47.0%	45.5%	58.2%

**Table 31: RRF data quality for all tracer products by all facility type**

	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals	National	All Hospitals	Weighted average
Amox - 250mg/500mg -Tab	58.3%	60.0%	22.2%	27.7%	-	56.3%	28.6%	48.4%	39.0%
Alu(any presentation)-Tab	71.4%	73.3%	47.1%	53.1%	50.0%	76.5%	53.1%	63.0%	60.4%
Ceft-0.5gm/1gm- inj	91.7%	81.8%	33.3%	33.8%	-	81.3%	36.7%	71.9%	56.1%
Cipro-250mg/500mg -Tab	81.8%	60.0%	44.4%	29.8%	-	80.0%	32.0%	63.3%	56.3%
Cotri -480mg/960mg -Tab	81.3%	60.0%	44.4%	35.4%	-	71.4%	38.0%	61.2%	52.3%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	83.3%	50.0%	42.9%	35.8%	68.2%	83.3%	36.7%	60.0%	53.0%
RL-500ml/1000 ml-Solution	77.8%	66.7%	20.0%	21.7%	-	64.3%	25.4%	60.9%	46.6%
Gent -20mg/ml or Gent-10mg/ml-Inj	100.0%	100.0%	40.0%	46.7%	87.5%	100.0%	47.2%	62.5%	67.9%
Gent-80mg/ml or 40mg/ml -Inj	71.4%	60.0%	30.0%	25.0%	100.0%	66.7%	27.7%	51.9%	50.3%



Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb -Susp	71.4%	87.5%	50.0%	32.4%	26.7%	66.7%	38.2%	71.4%	48.8%
ORS-Sachet	-	-	50.0%	37.2%	55.0%	-	37.9%	50.0%	36.0%
Oxytocin-Inj	64.3%	66.7%	54.5%	53.1%	-	50.0%	57.5%	62.2%	51.3%
Paracetamol -Supp/syrup	71.4%	66.7%	28.6%	52.3%	75.0%	62.5%	51.0%	55.0%	59.6%
RHZE/RH -Kit	68.8%	73.3%	72.2%	47.8%	-	70.0%	50.6%	71.4%	56.4%
Medroxy - Injection	88.2%	76.9%	58.8%	51.7%	37.0%	78.9%	53.7%	74.5%	59.4%
TTC- Eye Oint	-	-	62.5%	45.5%	69.2%	-	46.1%	62.5%	45.1%
Implanon	85.7%	66.7%	43.8%	42.9%	70.0%	70.0%	44.5%	64.4%	55.7%
AZT/3TC/NVP - 60/30/50mg -Tab	82.4%	76.9%	53.3%	57.1%	-	78.9%	58.9%	71.1%	69.6%
TDF/3TC/EFV - 300/150/600mg -Tab	81.3%	60.0%	64.7%	54.3%	-	66.7%	56.7%	68.8%	60.0%
NVP- 10mg/ml-Susp	75.0%	75.0%	66.7%	73.3%	-	71.4%	72.9%	72.3%	72.5%
FeFol -Tab	66.7%	60.0%	88.9%	51.6%	52.6%	60.0%	54.5%	73.9%	54.2%
MgSO4 - Inj	75.0%	75.0%	60.0%	51.9%	-	71.4%	54.6%	70.6%	60.9%
HCT- 25mg-Tab	71.4%	50.0%	66.7%	44.4%	-	55.6%	50.9%	64.3%	52.1%
Met- 500mg- Tab	71.4%	40.0%	100.0%	40.0%	-	55.6%	52.3%	64.3%	52.7%
Diazepam-5mg-Inj	71.4%	80.0%	66.7%	69.2%	-	66.7%	71.3%	73.3%	67.8%
Adrenaline-Inj	71.4%	50.0%	66.7%	42.1%	-	55.6%	47.3%	62.5%	49.6%
Amitriptyline-25mg-Tab	71.4%	62.5%	50.0%	33.3%	-	60.0%	49.5%	63.2%	57.9%
RTK Screening	80.0%	55.6%	66.7%	58.7%	-	66.7%	59.8%	67.6%	61.8%
mRDT	-	-	-	42.9%	50.0%	-	43.4%	-	44.3%
Urine dipstick	85.7%	66.7%	33.3%	50.0%	-	75.0%	53.2%	69.2%	65.0%
Blood lancet	87.5%	50.0%	14.3%	52.0%	-	75.0%	49.9%	52.6%	62.0%
Blood glucose test strip	75.0%	50.0%	50.0%	57.1%	-	62.5%	60.9%	66.7%	60.7%
Nifedipine -20mg-Tab	71.4%	66.7%	-	-	-	66.7%	65.6%	69.2%	66.7%
Morphine -10mg/ml- Inj	66.7%	66.7%	-	-	-	66.7%	0.0%	66.7%	66.7%
Cyclophosphamide-0.5gm/ 1gm-Inj	0.0%	-	-	-	-	100.0%	0.0%	0.0%	-
Weighted Average				47.4%	61.0%			68.1%	56.6%

Table 32: Storage condition fulfillment comparison between 2018 and 2015 surveys

Storage conditions	IPLS survey 2018	IPLS survey 2015
Storeroom with a lock	87.5%	98.0%
Pharmaceuticals organized in a manner facilitating FEFO	83.9%	70.0%
Product & cartons maintained in good condition	82.1%	51.0%
Visibility of labels and expiry and/or manufacturing dates	80.4%	51.0%
Storeroom maintained in good condition	78.6%	59.0%
Storeroom free from insect, rodents, or other animals (except cats)	73.2%	65.0%
Protection of pharmaceuticals from direct sunlight	71.1%	95.0%
Separation of unwanted stock from usable stock	65.5%	62.0%
Pharmaceutical logically arranged/organized	61.0%	73.0%
Storeroom with sufficient space	39.3%	67.0%

Table 33: Storage Condition Fulfillment for Health center

Storage conditions	IPLS survey 2018	IPLS survey 2015
Storeroom with a lock	82.7%	97.0%
Protection of pharmaceuticals from direct sunlight	78.3%	97.0%
Separation of unwanted stock from usable stock	65.5%	78.0%
Storeroom free from insect, rodents, or other animals (except cats)	64.3%	71.0%
Pharmaceutical logically arranged/organized	61.0%	75.0%
Visibility of labels and expiry and/or manufacturing dates	58.6%	75.0%
Pharmaceuticals organized in a manner facilitating FEFO	57.8%	78.0%
Product & cartons maintained in good condition	57.0%	63.0%

Storeroom maintained in good condition	55.8%	68.0%
Storeroom with sufficient space	42.6%	82.0%

**Table 34: Storage Condition Fulfillment for Health post**

<b>Storage conditions</b>	<b>IPLS survey 2018</b>	<b>IPLS survey 2015</b>
Protection of pharmaceuticals from direct sunlight	81.5%	74.0%
Storeroom with sufficient space	68.9%	59.0%
Storeroom with a lock	58.9%	90.0%
Product & cartons maintained in good condition	58.3%	48.0%
Separation of unwanted stock from usable stock	53.0%	52.0%
Storeroom free from insect, rodents, or other animals (except cats)	47.0%	43.0%
Storeroom maintained in good condition	43.7%	38.0%
Pharmaceuticals organized in a manner facilitating FEFO	39.1%	43.0%
Pharmaceutical logically arranged/organized	38.4%	43.0%
Visibility of labels and expiry and/or manufacturing dates	28.5%	36.0%

Table 35: Health facilities that had stock on hand of pharmaceuticals available on the day of the survey by health facility level (for 37 Pharmaceuticals)

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	National	Health post	EPSA priority hospitals
Amox - 250mg/500mg -Tab	100.0%	100.0%	100.0%	88.0%	88.7%		100.0%
Alu(any presentation)-Tab	90.0%	100.0%	90.0%	77.8%	78.8%	49.6%	90.0%
Ceft-0.5gm/1gm- inj	100.0%	100.0%	100.0%	86.3%	87.2%		100.0%
Cipro-250mg/500mg -Tab	94.4%	87.5%	100.0%	85.1%	85.7%		95.5%
Cotri -480mg/960mg -Tab	94.4%	100.0%	95.5%	84.3%	84.9%		100.0%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	77.8%	68.8%	63.6%	85.5%	84.0%	77.9%	77.3%
RL-500ml/1000 ml-Solution	94.4%	100.0%	100.0%	83.5%	84.4%		100.0%
Gent -20mg/ml or Gent-10mg/ml-Inj				43.8%	42.6%	36.6%	9.1%
Gent-80mg/ml or 40mg/ml -Inj	100.0%	100.0%	90.9%	72.7%	74.1%		100.0%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb - Susp	100.0%	100.0%	95.5%	80.7%	81.7%	67.6%	6.2%
ORS-Sachet	-	-	100.0%	90.0%	-	97.6%	-
Oxytocin-Inj	94.4%	100.0%	100.0%	81.9%	83.2%		95.5%
Paracetamol -Supp/syrup	83.3%	87.5%	95.5%	66.1%	67.8%	26.9%	81.8%
RHZE/RH -Kit	94.4%	100.0%	95.5%	86.7%	87.4%		95.5%
Medroxy - Injection	94.4%	100.0%	95.5%	90.0%	90.2%	90.3%	100.0%
TTC- Eye Oint	-	-	81.8%	63.1%	63.6%	54.4%	-
Implanon	94.4%	100.0%	90.9%	86.7%	87.0%	76.6%	100.0%
AZT/3TC/NVP - 60/30/50mg -Tab	100.0%	92.9%	90.0%	92.4%	92.4%		100.0%
TDF/3TC/EFV - 300/150/600mg -Tab	100.0%	93.8%	95.2%	97.0%	96.4%		100.0%
NVP- 10mg/ml-Susp	100.0%	93.8%	100.0%	90.9%	92.2%		100.0%
FeFol -Tab	66.7%	62.5%	77.3%	75.9%	75.6%	55.2%	63.6%
MgSO4 - Inj	94.4%	87.5%	81.8%	63.5%	64.9%		90.9%
HCT- 25mg-Tab	100.0%	100.0%	100.0%	56.9%	59.8%		100.0%
Met- 500mg- Tab	88.9%	93.8%	86.4%	16.9%	21.7%		86.4%
Diazepam-5mg-Inj	94.4%	100.0%	77.3%	26.6%	30.5%		95.5%
Adrenaline-Inj	100.0%	100.0%	95.5%	81.9%	83.0%		100.0%
Amitriptyline-25mg-Tab	100.0%	100.0%	95.5%	26.5%	31.2%		100.0%
RTK Screening	94.4%	100.0%	90.9%	84.7%	85.4%		95.5%
mRDT	-	-	-	59.9%	46.6%	48.8%	-
Urine dipstick	83.3%	93.8%	90.5%	59.0%	61.2%		86.4%
Blood lancet	94.4%	93.8%	95.5%	75.9%	76.9%		100.0%
Blood glucose test strip	88.9%	100.0%	95.5%	36.9%	40.9%		90.9%
Nifedipine -20mg-Tab	100.0%	93.8%	-	-	99.0%		95.5%

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	National	Health post	EPSA priority hospitals
Morphine -10mg/ml- Inj	77.8%	37.5%	-	-	46.6%		68.2%
Cyclophosphamide-0.5gm/ 1gm-Inj	80%	-	-	-	80%		80%
Giemsa stain solution	83.3%	87.5%	90.9%	57.4%	59.5%	-	4.5%
Penta -Inj	82.4%	85.7%	90.0%	95.6%	95.1%	74.1%	76.2%

Table 36: Health facilities with any stock out within the 6 months preceding the survey

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	National	Health post	EPSA priority hospitals
Amox - 250mg/500mg -Tab	5.9%	6.3%	18.2%	19.0%	18.6%	-	4.5%
Alu(any presentation)-Tab	41.2%	40.0%	19.0%	27.7%	27.7%	38.3%	40.0%
Ceft-0.5gm/1gm- inj	38.9%	31.3%	31.8%	27.5%	28.1%	-	31.8%
Cipro-250mg/500mg -Tab	29.4%	25.0%	91.0%	21.9%	21.5%	-	27.3%
Cotri -480mg/960mg -Tab	33.3%	25.0%	36.4%	21.1%	21.9%	-	45.5%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	21.4%	18.2%	21.4%	16.1%	16.1%	23.0%	27.8%
RL-500ml/1000 ml-Solution	35.3%	37.5%	18.2%	14.9%	15.6%	-	40.9%
Gent -20mg/ml or Gent-10mg/ml-Inj	50.0%	0.0%	42.9%	20.9%	21.4%	39.5%	33.3%
Gent-80mg/ml or 40mg/ml -Inj	22.2%	0.0%	4.8%	17.9%	16.8%	57.1%	18.2%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb -Susp	33.3%	31.3%	13.6%	24.2%	24.1%	24.8%	31.8%
ORS-Sachet	-	-	27.3%	17.1%	17.7%	18.3%	28.7%
Oxytocin-Inj	33.3%	6.3%	18.2%	21.6%	20.8%	-	31.8%
Paracetamol -Supp/syrup	33.3%	20.0%	22.7%	45.7%	44.1%	65.6%	33.3%
RHZE/RH -Kit	5.9%	18.8%	4.8%	13.5%	13.4%	-	4.8%
Medroxy - Injection	16.7%	12.5%	14.3%	18.7%	18.4%	13.3%	18.2%
TTC- Eye Oint	-	-	50.0%	55.3%	55.0%	65.1%	45.9%
Implanon	23.5%	18.8%	28.6%	23.9%	23.6%	13.1%	27.3%
AZT/3TC/NVP - 60/30/50mg -Tab	29.4%	21.4%	35.0%	16.4%	20.9%	-	21.1%
TDF/3TC/EFV - 300/150/600mg -Tab	38.9%	26.7%	19.0%	6.3%	9.5%	-	36.4%
NVP- 10mg/ml-Susp	55.6%	75.0%	27.3%	17.7%	20.7%	-	68.2%
FeFol -Tab	50.0%	66.7%	52.4%	42.6%	43.9%	44.9%	47.4%
MgSO4 - Inj	50.0%	50.0%	54.5%	36.8%	37.8%	-	59.1%
HCT- 25mg-Tab	50.0%	37.5%	22.7%	33.5%	33.1%	-	45.5%

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	National	Health post	EPSA priority hospitals
Met- 500mg- Tab	41.2%	25.0%	28.6%	52.9%	47.3%	-	42.9%
Diazepam-5mg-Inj	55.6%	68.8%	47.6%	70.4%	68.5%	-	68.2%
Adrenaline-Inj	16.7%	6.3%	9.1%	18.4%	17.6%	-	13.6%
Amitriptyline-25mg-Tab	38.9%	25.0%	33.3%	40.4%	37.7%	-	36.4%
RTK Screening	44.4%	50.0%	54.5%	35.9%	36.9%	-	50.0%
mRDT	-	-	-	33.0%	32.9%	35.7%	32.9%
Urine dipstick	44.4%	50.0%	22.7%	32.6%	32.5%	-	45.5%
Blood lancet	11.8%	20.0%	18.2%	9.2%	10.0%	-	13.6%
Blood glucose test strip	27.8%	37.5%	27.3%	41.8%	40.6%	-	27.3%
Nifedipine -20mg-Tab	38.9%	43.8%	-	-	48.0%	-	31.8%
Morphine -10mg/ml- Inj	50.0%	25.0%	-	-	29.5%	-	50.0%
Cyclophosphamide-0.5gm/ 1gm-Inj	57.1%	-	-	-	31.3%	-	71.4%
Penta -Inj	6.7%	21.4%	15.0%	15.4%	15.6%	18.3%	11.8%

Table 37: Health facilities with 1-2 times stock out within the 6 months preceding the survey

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals
Amox - 250mg/500mg -Tab	5.9%	6.3%	18.2%	19.0%	-	4.8%
Alu(any presentation)-Tab	41.2%	40.0%	19.0%	27.7%	38.3%	42.1%
Ceft-0.5gm/1gm- inj	38.9%	31.3%	31.8%	27.5%	-	33.3%
Cipro-250mg/500mg -Tab	29.4%	25.0%	91.0%	21.0%	-	28.6%
Cotri -480mg/960mg -Tab	33.3%	25.0%	36.4%	21.1%	-	42.9%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	21.4%	18.2%	21.4%	16.1%	23.0%	29.4%
RL-500ml/1000 ml-Solution	35.3%	37.5%	18.2%	14.9%	-	42.9%
Gent -20mg/ml or Gent-10mg/ml-Inj	50.0%	0.0%	42.9%	20.9%	39.5%	33.3%
Gent-80mg/ml or 40mg/ml -Inj	22.2%	0.0%	4.8%	17.9%	57.1%	19.0%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb - Susp	33.3%	31.3%	13.6%	24.2%	24.8%	33.3%
ORS-Sachet	-	-	27.3%	17.1%	18.3%	-
Oxytocin-Inj	33.3%	6.3%	18.2%	21.6%	-	33.3%
Paracetamol -Supp/syrup	33.3%	20.0%	22.7%	45.7%	65.6%	30.0%
RHZE/RH -Kit	5.9%	18.8%	4.8%	13.5%	-	5.0%
Medoxy - Injection	16.7%	12.5%	14.3%	18.7%	13.3%	19.0%

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals
TTC- Eye Oint	-	-	50.0%	55.3%	-	
Implanon	23.5%	18.8%	28.6%	23.9%	13.1%	28.6%
AZT/3TC/NVP - 60/30/50mg -Tab	29.4%	21.4%	35.0%	16.2%	-	22.2%
TDF/3TC/EFV - 300/150/600mg -Tab	38.9%	26.7%	19.0%	12.6%	-	38.1%
NVP- 10mg/ml-Susp	55.6%	75.0%	27.3%	17.7%	-	71.4%
FeFol -Tab	50.0%	66.7%	52.4%	42.6%	44.9%	50.0%
MgSO4 - Inj	50.0%	50.0%	54.5%	36.8%	-	61.9%
HCT- 25mg-Tab	50.0%	37.5%	22.7%	33.5%	-	47.6%
Met- 500mg- Tab	41.2%	25.0%	28.6%	52.9%	-	45.0%
Diazepam-5mg-Inj	55.6%	68.8%	47.6%	70.4%	-	71.4%
Adrenaline-Inj	16.7%	6.3%	9.1%	18.4%	-	14.3%
Amitriptyline-25mg-Tab	38.9%	25.0%	33.3%	40.4%	-	38.1%
RTK Screening	44.4%	50.0%	54.5%	35.9%	-	52.4%
mRDT	-	-	-	35.7%	-	-
Urine dipstick	44.4%	50.0%	22.7%	32.6%	-	47.6%
Blood lancet	11.8%	20.0%	18.2%	9.2%	-	9.5%
Blood glucose test strip	27.8%	37.5%	27.3%	41.8%	-	28.6%
Nifedipine -20mg-Tab	38.9%	43.8%	-	-	-	33.3%
Morphine -10mg/ml- Inj	50.0%	25.0%	-	-	-	47.4%
Cyclophosphamide-0.5gm/ 1gm-Inj	57.1%	-	-	-	-	66.7%
Penta -Inj	6.7%	21.4%	15.0%	15.4%	18.3%	12.5%

**Table 38: Duration of stock out within the 6 months preceding the survey**

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals
Amox - 250mg/500mg -Tab	1	1	3	40	-	1
Alu(any presentation)-Tab	7	6	3	55	40	8
Ceft-0.5gm/1gm- inj	7	5	6	56	-	7
Cipro-250mg/500mg -Tab	5	4	1	47	-	6
Cotri -480mg/960mg -Tab	7	4	7	76	-	10
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	2	2	2	65	69	4
RL-500ml/1000 ml-Solution	6	6	4	52	-	9
Gent -20mg/ml or Gent-10mg/ml-Inj	1	0	2	125	104	1
Gent-80mg/ml or 40mg/ml -Inj	4	0	1	57	-	4

Product description	Tertiary hospital	General hospital	Primary hospital	Health center	Health post	EPSA priority hospitals
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb - Susp	6	5	3	65	2	7
ORS-Sachet	0	0	5	52	9	0
Oxytocin-Inj	6	1	2	78	-	7
Paracetamol -Supp/syrup	7	3	5	78	92	7
RHZE/RH -Kit	1	3	0	42	-	1
Medroxy - Injection	3	1	2	30	18	3
TTC- Eye Oint	0	0	8	78	72	0
Implanon	4	3	5	54	69	6
AZT/3TC/NVP - 60/30/50mg -Tab	5	2	4	44	-	4
TDF/3TC/EFV - 300/150/600mg -Tab	7	4	4	66	-	8
NVP- 10mg/ml-Susp	10	12	4	37	-	15
FeFol -Tab	7	7	9	76	92	7
MgSO4 - Inj	8	8	9	77	-	12
HCT- 25mg-Tab	9	5	4	67	-	10
Met- 500mg- Tab	7	4	4	74	-	9
Diazepam-5mg-Inj	10	10	7	105	-	15
Adrenaline-Inj	3	1	1	81	-	3
Amitriptyline-25mg-Tab	7	4	6	114	-	8
RTK Screening	6	8	10	50	-	9
mRDT	0	0	0	59	23	0
Urine dipstick	6	6	4	74	-	8
Blood lancet	2	3	3	159	-	3
Blood glucose test strip	5	6	4	76	-	6
Nifedipine -20mg-Tab	7	7	0	-	-	7
Morphine -10mg/ml- Inj	8	1	0	-	-	9
Cyclophosphamide-0.5gm/ 1gm-Inj	5	0	0	-	-	5
Penta -Inj	1	2	0	14	76	2

Table 39: Month of stock by health facility type

Products	Tertiary hospital			General hospital			Primary hospital			Health center			Health post			EPSA priority hospitals		
	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked	Understocked	Optimally stocked	Overstocked
Amox - 250mg/500mg -Tab	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	50.0%	25.0%	25.0%	61.1%	27.8%	11.1%				100.0%	0.0%	0.0%
Alu(any presentation)-Tab	27.3%	9.1%	63.6%	14.3%	14.3%	71.4%	40.0%	0.0%	60.0%	20.9%	7.0%	72.1%	67.4%	0.0%	32.6%	25.0%	16.7%	58.3%
Ceft-0.5gm/1gm- inj	40.0%	60.0%	0.0%	60.0%	20.0%	20.0%	62.5%	25.0%	12.5%	76.5%	17.6%	5.9%				80.0%	20.0%	0.0%
Cipro-250mg/500mg -Tab	60.0%	40.0%	0.0%	100.0%	0.0%	0.0%	66.7%	33.3%	0.0%	70.0%	25.0%	5.0%				80.0%	20.0%	0.0%
Cotri -480mg/960mg -Tab	66.7%	16.7%	16.7%	66.7%	33.3%	0.0%	42.9%	57.1%	0.0%	80.5%	9.8%	9.8%				62.5%	25.0%	12.5%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	60.0%	20.0%	20.0%	77.8%	16.7%	5.6%	95.8%	4.2%	0.0%	100.0%	0.0%	0.0%
RL-500ml/1000 ml-Solution	30.8%	15.4%	53.8%	16.7%	16.7%	66.7%	13.3%	0.0%	86.7%	11.5%	2.1%	86.5%				37.5%	6.3%	56.3%
Gent -20mg/ml or Gent-10mg/ml-Inj	0.0%	100.0%		0.0%	100.0%		0.0%	100.0%		7.7%		92.3%						
Gent-80mg/ml or 40mg/ml -Inj	0.0%	0.0%	100.0%				100.0%	0.0%	0.0%	90.3%	6.5%	3.2%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb -Susp	60.0%	20.0%	20.0%	80.0%	20.0%	0.0%	66.7%	33.3%	0.0%	69.2%	23.1%	7.7%						
ORS-Sachet							14.3%	14.3%	71.4%	9.2%	5.8%	85.0%	5.9%	2.9%	91.2%			
Oxytocin-Inj	16.7%	0.0%	83.3%	7.1%	0.0%	92.9%	15.4%	0.0%	84.6%	20.0%	5.7%	74.3%				12.5%		87.5%
Paracetamol -Supp/syrup	40.0%	20.0%	40.0%	50.0%	50.0%	0.0%	66.7%	33.3%	0.0%	87.0%	8.7%	4.3%	100.0%	0.0%	0.0%			
RHZE/RH -Kit	6.3%	6.3%	87.5%	20.0%	6.7%	73.3%	0.0%	6.3%	93.8%	17.2%	6.1%	76.8%				10.0%	5.0%	85.0%
Medroxy - Injection	5.9%	5.9%	88.2%	0.0%	0.0%	100.0%	0.0%	6.7%	93.3%	13.6%	14.5%	71.8%	14.0%	7.0%	79.1%	6.3%	0.0%	93.8%
TTC- Eye Oint							46.2%	7.7%	46.2%	27.9%	9.3%	62.8%	26.7%	0.0%	73.3%			
Implanon	15.4%	7.7%	76.9%	0.0%	10.0%	90.0%	7.7%	7.7%	84.6%	24.7%	10.8%	64.5%	13.8%	0.0%	86.2%	20.0%	0.0%	80.0%
AZT/3TC/NVP - 60/30/50mg - Tab	33.3%	20.0%	46.7%	27.3%	9.1%	63.6%	23.1%	15.4%	61.5%	13.5%	10.8%	75.7%				33.3%	6.7%	60.0%
TDF/3TC/EFV - 300/150/600mg -Tab	12.5%	37.5%	50.0%	33.3%	6.7%	60.0%	17.6%	17.6%	64.7%	11.1%	3.2%	85.7%				40.0%	10.0%	50.0%
NVP- 10mg/ml-Susp	37.5%	12.5%	50.0%	45.5%	18.2%	36.4%	15.4%	15.4%	69.2%	8.3%	4.2%	87.5%				62.5%	0.0%	37.5%
FeFol -Tab	46.2%	0.0%	53.8%	40.0%	20.0%	40.0%	40.0%	20.0%	40.0%	26.1%	12.5%	61.4%	18.5%	7.4%	74.1%	40.0%	0.0%	60.0%
MgSO4 - Inj	50.0%	14.3%	35.7%	57.1%	0.0%	42.9%	66.7%	0.0%	33.3%	14.3%	5.7%	80.0%				66.7%	5.6%	27.8%
HCT- 25mg-Tab	18.8%	31.3%	50.0%	33.3%	0.0%	66.7%	5.9%	11.8%	82.4%	10.1%	4.3%	85.5%				25.0%	20.0%	55.0%
Met- 500mg- Tab	33.3%	26.7%	40.0%	25.0%	18.8%	56.3%	8.3%	16.7%	75.0%	31.6%	5.3%	63.2%				57.9%	5.3%	36.8%
Diazepam-5mg-Inj	23.1%	23.1%	53.8%	55.6%	11.1%	33.3%	10.0%	30.0%	60.0%	35.0%	5.0%	60.0%				35.7%	14.3%	50.0%



Adrenaline-Inj	0.0%	13.3%	86.7%	7.7%	0.0%	92.3%	7.7%	0.0%	92.3%	8.2%	2.0%	89.8%				5.6%	11.1%	83.3%
Amitriptyline-25mg-Tab	15.4%	7.7%	76.9%	13.3%	20.0%	66.7%	20.0%	6.7%	73.3%	15.0%	0.0%	85.0%				17.6%	5.9%	76.5%
RTK Screening	16.7%	16.7%	66.7%	75.0%	8.3%	16.7%	20.0%	20.0%	60.0%	36.8%	10.5%	52.6%				53.3%	0.0%	46.7%
mRDT										20.8%	7.8%	71.4%	19.0%	4.8%	76.2%			
Urine dipstick	16.7%	33.3%	50.0%	36.4%	27.3%	36.4%	41.2%	5.9%	52.9%	16.7%	13.9%	69.4%				46.2%	0.0%	53.8%
Blood lancet	10.0%	10.0%	80.0%	27.3%	0.0%	72.7%	0.0%	7.1%	92.9%	3.1%	0.0%	96.9%				15.4%	7.7%	76.9%
Blood glucose test strip	36.4%	18.2%	45.5%	22.2%	33.3%	44.4%	14.3%	0.0%	85.7%	35.0%	5.0%	60.0%				25.0%	25.0%	50.0%
Nifedipine -20mg-Tab	20.0%	20.0%	60.0%	23.1%	23.1%	53.8%										29.4%	11.8%	58.8%
Morphine -10mg/ml- Inj	26.7%	13.3%	60.0%	20.0%	0.0%	80.0%										23.5%	5.9%	70.6%
Cyclophosphamide-0.5gm/ 1gm-Inj	66.7%	33.3%														66.7%	33.3%	
Penta -Inj	0.0%	25.0%	75.0%	25.0%	25.0%	50.0%	0.0%	16.7%	83.3%	13.7%	20.6%	65.6%	100.0%	0.0%	0.0%	33.3%		66.7%

Table 40: Month of stock by HCMIS and paper based health facilities

Products	HCMIS			Paper based		
	Under stocked	Optimally stocked	Over stocked	Under stocked	Optimally stocked	Over stocked
Amox - 250mg/500mg -Tab	80.0%	10.0%	10.0%	68.8%	18.8%	12.5%
Alu(any presentation)-Tab	32.7%	3.8%	63.5%	37.5%	2.8%	59.7%
Ceft-0.5gm/1gm- inj	76.2%	14.3%	9.5%	83.3%	10.4%	6.3%
Cipro-250mg/500mg -Tab	81.3%	18.8%	0.0%	85.7%	8.6%	5.7%
Cotri -480mg/960mg -Tab	65.0%	30.0%	5.0%	81.1%	8.1%	10.8%
Amox-125mg/250mg-Tab or Amox-125 mg/5ml - Susp	69.2%	15.4%	15.4%	93.5%	3.2%	3.2%
RL-500ml/1000 ml-Solution	15.9%	4.8%	79.4%	15.1%	1.4%	83.6%
Gent -20mg/ml or Gent-10mg/ml-Inj						
Gent-80mg/ml or 40mg/ml -Inj	66.7%	0.0%	33.3%	89.3%	7.1%	3.6%
Meb-100 mg /Alb-400 mg -Tab or Meb/ Alb -Susp						
ORS-Sachet	14.0%	7.0%	79.1%	13.2%	1.1%	85.7%
Oxytocin-Inj	18.6%		81.4%	20.0%		80.0%
Paracetamol -Supp/syrup	76.9%	11.5%	11.5%	91.1%	5.1%	3.8%
RHZE/RH -Kit	17.8%	1.4%	80.8%	16.4%	5.5%	78.1%
Medroxy - Injection	8.7%	5.8%	85.5%	19.5%	9.8%	70.7%
TTC- Eye Oint	31.6%	2.6%	65.8%	37.7%	4.9%	57.4%
Implanon	17.7%	8.1%	74.2%	28.4%	6.0%	65.7%
AZT/3TC/NVP - 60/30/50mg -Tab	34.4%	6.6%	59.0%	6.7%	0.0%	93.3%
TDF/3TC/EFV - 300/150/600mg -Tab	25.4%	7.0%	67.6%	10.0%	5.0%	85.0%
NVP- 10mg/ml-Susp	35.1%	1.8%	63.2%	12.9%	0.0%	87.1%
FeFol -Tab	42.6%	11.1%	46.3%	29.9%	4.5%	65.7%
MgSO4 - Inj	50.0%	2.0%	48.0%	24.0%	0.0%	76.0%
HCT- 25mg-Tab	20.6%	10.3%	69.1%	10.2%	0.0%	89.8%
Met- 500mg- Tab	35.3%	5.9%	58.8%	36.4%	9.1%	54.5%
Diazepam-5mg-Inj	31.0%	14.3%	54.8%	50.0%	0.0%	50.0%
Adrenaline-Inj	8.5%	5.1%	86.4%	3.2%	0.0%	96.8%
Amitriptyline-25mg-Tab	16.7%	10.4%	72.9%	13.3%	0.0%	86.7%
RTK Screening	48.4%	6.3%	45.3%	33.3%	7.8%	58.8%
mRDT	31.6%	0.0%	68.4%	24.1%	3.4%	72.4%
Urine dipstick	35.2%	13.0%	51.9%	27.3%	0.0%	72.7%
Blood lancet	10.4%	2.1%	87.5%	5.3%	0.0%	94.7%
Blood glucose test strip	34.7%	6.1%	59.2%	20.0%	0.0%	80.0%
Nifedipine -20mg-Tab	33.3%	11.1%	55.6%	0.0%	0.0%	100.0%
Morphine -10mg/ml- Inj	31.6%	5.3%	63.2%	0.0%	0.0%	100.0%
Cyclophosphamide-0.5gm/ 1gm-Inj	66.7%	33.3%				

Products	HCMIS			Paper based		
	Under stocked	Optimally stocked	Over stocked	Under stocked	Optimally stocked	Over stocked
Penta -Inj	11.4%	15.9%	72.7%	26.7%	10.5%	62.9%

Table 41: Frequency of emergency order

Order frequency	Tertiary hospital (n=18)	General hospital (n=16)	Primary hospital (n=22)	Health center (n=249)	National	Health post (n=151)	EPSA priority hospitals (n=22)
No emergency order	11.1%	18.8%	50.0%	71.5%	68.8%	82.1%	22.7%
One emergency order	27.8%	18.8%	27.3%	15.3%	16.0%	7.9%	22.7%
Two emergency orders	0.0%	18.8%	9.1%	6.8%	7.1%	5.3%	9.1%
Three emergency orders	16.7%	31.3%	4.5%	4.4%	5.2%	2.6%	13.6%
Four emergency orders	5.6%	0.0%	0.0%	0.8%	0.8%	0.7%	4.5%
Five emergency orders	5.6%	12.5%	4.5%	0.8%	1.2%	0.7%	4.5%
More than five emergency orders	33.3%	0.0%	4.5%	0.4%	0.4%	0.7%	22.7%

Table 42: Wastage

Fiscal year	Category	Tertiary hospital	General hospital	Primary hospital	Health center	EPSA priority hospitals
EFY 2014/15	RDF	7.6%	3.1%	0.9%	4.9%	6.4%
	Program	12.1%	5.6%	3.0%	4.5%	6.3%
EFY 2015/16	RDF	7.7%	4.4%	3.9%	9.5%	7.1%
	Program	3.3%	9.0%	11.0%	8.6%	2.7%
EFY 2016/17	RDF	3.1%	4.1%	8.0%	6.9%	3.4%
	Program	5.7%	4.4%	2.3%	11.1%	5.0%

Table 43: EPSA share from total supply by value

Fiscal year	Category	Tertiary hospital	General hospital	Primary hospital	Health center	EPSA priority hospitals
EFY 2014/15	RDF	88.1%	83.0%	83.9%	89.0%	85.9%
	Program	83.6%	98.5%	93.4%	92.4%	86.7%
EFY 2015/16	RDF	87.9%	85.7%	80.0%	80.7%	88.3%
	Program	94.4%	99.0%	97.3%	91.2%	95.4%
EFY 2016/17	RDF	82.6%	70.7%	84.1%	76.1%	78.8%
	Program	91.6%	89.1%	88.7%	90.7%	87.4%

## Annex 2: Integrated Pharmaceutical Logistics System Survey in Ethiopia

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

Good morning/afternoon. My name is \_\_\_\_\_. My colleague and I represent Pharmaceutical Supply Agency (EPSA). We are conducting a survey regarding the health commodity logistics system, particularly related to the implementation of Integrated Pharmaceutical Logistics System (IPLS) at health facilities. The overall objective of the survey is to collect current information on IPLS performance and stock status of key health products. We are assessing the availability of selected commodities and information about how you manage the products. We are visiting randomly selected health facilities throughout the country. This is not a supervisory visit; we are evaluating neither the performance of individual staff members nor individual facilities.

The results of this national survey will provide information to make decisions and promote improvements in implementing IPLS. The survey will also be conducted in the future.

We would like to ask the pharmacy head, store manager, EPI coordinator, and supply officer a series of questions about the products and supplies available at this facility. We would also like to take inventory of selected products you have in stock today and observe the general storage conditions. Some of the questions relate to vaccine management so we would also like to speak to whoever is responsible for managing vaccines.

Do you have any questions?

May I begin the interview now?		
Respondent agrees to be interviewed	1	Continue interview
Respondent does not agree to be interviewed	2	End the interview*

**\*INTERVIEWER: If the person in-charge refuses to take part in the survey, please communicate with immediate supervisor.**

Interviewer name	
Interviewer ID	
Date <i>[Scripter: Auto insert the date of interview]</i>	DD/MM/YYYY

## SECTION I: FACILITY IDENTIFICATION AND INFRASTRUCTURE

<b>101.</b>	Interviewee information (1) <i>(INTERVIEWER: Ask the facility head or their delegate)</i>	
	a. Name	
	b. Position	
	c. Telephone	

<b>102.</b>	Facility location		
	a. Region <i>[Scripter: Insert a drop down list of the regions]</i>	Addis Ababa	1
		Afar	2
		Amhara	3
		Benishangul Gumuz	4
		Dire Dawa	5
		Gambella	6
		Harrari	7
		Oromia	8
		SNNP	9
		Somali	10
	Tigray	11	
	b. Zone/Sub city <i>(INTERVIEWER: Write name)</i>		
	c. Woreda <i>(INTERVIEWER: Write name)</i>		
d. City/town <i>(INTERVIEWER: Write name)</i>			
e. Location	Rural	1	

	<b>(INTERVIEWER: Urban refers to municipality managed locations, except for health posts)</b>	Urban	2
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<b>103.</b>	Full name of facility (including the level)	
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<b>104.</b>	Which year did the facility become operational? <b>(INTERVIEWER: Record the year in Ethiopian calendar)</b>	<b>[Scripter: Limit the range between 1890 and 2010]</b>	Year	
			Don't know	999

<b>105.</b>	Type of facility by level <b>(SINGLE RESPONSE)</b> <b>[Scripter: For codes 1-4, skip to Q107]</b>	Tertiary/specialized hospital	1
		General hospital	2
		Primary hospital	3
		Health center	4
		Health post	5

<b>106.</b>	If the facility is a health post, record the name of supervising health center	
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<b>107.</b>	Type of facility by service for health centers and hospitals <b>(SINGLE RESPONSE)</b> <b>[Scripter: To be asked if codes 1-4 are selected at Q105]</b>	Provides ART services	1
		Provides PMTCT services (but not ART)	2
		Provides neither ART nor PMTCT services	3

<b>108.</b>	a. Type of facility by IPLS implementation model <b>(SINGLE RESPONSE)</b> <b>[Scripter: To be asked if codes 1-4 are selected at Q105]</b>	HCMIS	1
		Paper based/manual	2
	b. Record the HCMIS implementation phase	Matured	1

	<b>(SINGLE RESPONSE)</b> <i>[Scripter: To be asked if code 1 is selected at Q108 (a)]</i>	Intensive	2
		Pre-HCMIS	3

<b>109.</b>	Program product delivery modalities from EPSA (except vaccine) <i>[Scripter: To be asked if codes 1-4 are selected at Q105]</i>					
	a. For most of program products, does EPSA deliver directly to your facility? <b>(SINGLE RESPONSE)</b> <i>(INTERVIEWER: Program items do not include vaccine)</i>	Yes	1			
		No	2			
	b. Which EPSA hub usually resupplied this facility in the past six months? <b>(SINGLE RESPONSE)</b>	Adama		1		
		Addis Ababa (I or II)		2		
		Arba Minch		3		
		Assosa		4		
		Bahir Dar		5		
		Dessie		6		
		Dire Dawa		7		
		Gambella		8		
		Gondar		9		
		Hawassa		10		
		Jijiga		11		
		Jimma		12		
Mekelle		13				
Negelle		14				
Nekemte		15				
Semera		16				
Shire		17				
Don't know/not sure		99				
<b>110.</b>	Which of the following infrastructure is available at and around the health facility and/or pharmacy store	Infrastructure	Facility		Pharmacy store	
			Yes	No	Yes	No

(operational within the past 2 months)? <b>[Scripter: Deactivate "Paved road" for Pharmacy store]</b> <b>[Scripter: Deactivate pharmacy store if coded 5 at Q105]</b>	a. Paved road	1	2		
	b. Operational electricity (main grid, generator, wind, or solar)	1	2	1	2
	c. Operational backup generator	1	2	1	2
	d. Operational water supply	1	2	1	2
	e. Mobile/wireless/land line phone	1	2	1	2
	f. Operational computer	1	2	1	2
	g. Internet access	1	2	1	2

**INTERVIEWER: Ask the person in-charge to introduce the team to the staff 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 them before leaving the facility.**

## SECTION II: IPLS IMPLEMENTATION

**[Scripter: Deactivate Q201(a), (b), & (c) if code 5 is selected at Q105]**

201.	Interviewee information (11) <b>(INTERVIEWER: Ask this question to either Pharmacy Head, Store Manager, Supply Officer, or their delegates)</b> <b>[Scripter: This question should capture information for up to 4 interviewees; it should be asked sequentially for the 1<sup>st</sup> person, then the 2<sup>nd</sup> person, then 3<sup>rd</sup> person, and then 4<sup>th</sup> person]</b>						
	a. Name						
	b. Position						
	c. Telephone <b>[Scripter: The number of digits should be limited to 10]</b>						
	d. Number of years & months of experience at the facility <b>[Scripter: The month value should be limited to 0-11]</b>			<table border="1"> <tr> <td>Year</td> <td></td> </tr> <tr> <td>Month</td> <td></td> </tr> </table>	Year		Month
Year							
Month							



**STAFFING**

**[Scripter: Q202 –206 are to be asked if codes 1-4 are selected at Q105]**

202.	How many professionals are currently assigned to pharmacy unit of the facility (i.e., dispensing unit, store, drug information, and other units)? <b>(INTERVIEWER: Ask this question to the pharmacy head or their delegate)</b> <b>[Scripter: (1) The number of female pharmacy professionals should not be greater than the total number of female professionals; (2) The number of male pharmacy professionals should not be greater than the total number of male professionals]</b>		a. Total	b. Pharmacy professional
		Female		
		Male		

203.	How many staff, with each of the following qualifications, are currently deployed in the pharmacy unit of the facility? <b>(INTERVIEWER: Please count each staff member only once, on the basis of the highest technical or professional qualification)</b> <b>[Scripter: (1) The sum of the number of total staff with different qualifications (i.e. Q203a) should be equal to the total staff at Q202a; (2) The sum of the number of pharmacy professionals with different qualifications (i.e. Q203b) should be equal to the total staff at Q202b]</b>		a. Total	b. Pharmacy professional
		Masters		
		Bachelor degree		
		Diploma (1-4 level)		
		Other (specify)		

205.	How many of the existing pharmacy unit staff have been trained in IPLS? <b>(INTERVIEWER: Ask this question to the pharmacy head or delegate)</b> <b>[Scripter: (1) If no provider is trained, skip to 207; (2) The value should less than or equal to the sum of the total number of female and male professionals at Q202a]</b>	
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206.	Of the providers trained in IPLS, how many had In-Service Training – IST (i.e. after graduation) and how many had Pre-Service Training – PST (i.e. in college before graduation), or both? <b>[Scripter: The sum of number of professionals trained by type should be equal to the value at Q205]</b>	a. In-Service Training (IST) only	
		b. Pre-Service Training (PST) only	
		c. Both In-Service & Pre-Service	
		d. Trained but not sure of the type	

**[Scripter: Q207 – 209 are to be asked if code 5 is selected at Q105]**

207.	How many Health Extension Workers (HEWs) and other health professionals work in this health post?	
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208.	How many of the HEWs and other health professionals at this health post have been trained in IPLS/HP Resupply including how to maintain a bin card and fill in HPMRR? <b>(INTERVIEWER: While asking, give emphasis on whether they are trained on how to maintain bin card and fill in HPMRR)</b> <b>[Scripter: (1) If no HEW is trained, skip to 210; (2) The number of trained HEWs and other health professionals should be less than or equal to the value at Q207]</b>	
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209.	For those trained in IPLS/HP Resupply, how was the training given? <b>(MULTIPLE RESPONSE)</b> <b>[Scripter: The number of columns to be filled should be based on the number of professionals trained at Q208]</b>		a.	b.	c.	d.	e.
			HE W 1	HE W 2	HE W 3	HE W 4	HE W 5
		Pre-Service (i.e. in college before graduation)	1	1	1	1	1
		In-Service (after graduation) Classroom/formal	2	2	2	2	2
		In Service (after graduation) On the Job Training/Informal (one-on-one)	3	3	3	3	3
Other (specify)	4	4	4	4	4		

**SOP, JOB AIDS, FORMATS AVAILABILITY, AND USE**

210.	<p>Are the following IPLS formats, job aides, and SOPs available at the facility (i.e., availability of blank formats for future use, except IPLS SOP and health post job aides/flip books)?</p> <p><b>(INTERVIEWER: Select "yes" only after verifying availability)</b></p> <p><b>(INTERVIEWER: Formats could be electronic or manual)</b></p> <p><b>[Scripter: Activate only "d", "e", "f", "i", and "j" if code 5 is selected at Q105]</b></p> <p><b>[Scripter: Deactivate "d" &amp; "e" if codes 1-4 are selected at Q105]</b></p>		Yes	No
		a. IPLS SOP	1	2
		b. RRF	1	2
		c. IFRR	1	2
		d. HPMRR	1	2
		e. Health post job aides/flip books	1	2
		f. Bin Cards	1	2
		i. Model 19	1	2
j. Model 22	1	2		

212.	<p>Which of the following recording formats has the facility used within the last six months?</p> <p><b>(INTERVIEWER: Verify if there is at least one transaction over the last six months)</b></p>		Yes	No
		a. Bin card	1	2
		c. Model 19	1	2

### REPORTING AND ORDERING

213.	<p>Which of the following reporting formats does the facility use?</p> <p><b>(INTERVIEWER:(1) Verify if the facility has at least one completed format for any of the past three review/reporting period;</b></p> <p><b>[Scripter: Deactivate "a" only if code 5 is selected at Q105]</b></p> <p><b>[Scripter: Deactivate "c" only if codes 1-4 are selected at Q105]</b></p>		Yes	No
		a. RRF	1	2
		c. HPMRR	1	2

**[Scripter: Activate RRF&HPMRR only if code 1 is selected for their respective question at Q213]**

214.	<p>Ask to see the most recent RRF and HPMRR completed by the facility. Record the reporting period and reporting date.  <b>(INTERVIEWER: For a health post, take a picture of the most recent HPMRR)</b>  <b>[Scripter: Deactivate "a" only if code 5 is selected at Q105]</b>  <b>[Scripter: Deactivate "c" only if codes 1-4 are selected at Q105]</b>  <b>[Scripter: Activate "a" only if code 1 is selected at Q213a; and Activate "c" only if code 1 is selected at Q213c]</b>  <b>[Scripter: Allow here a picture to be taken if code 5 is selected at Q105 and code 1 is selected at Q213c]</b></p>	1.Reporting period (MMM/YYYY)		2.Reporting date (DD/MMM/YYYY)	
		From	To		
		a. RRF			
		c. HPMRR			

**[Scripter: Ask Q215 if code 1 is selected at Q212(a)]**

215.	<p>For how many of the tracer products did the facility record the three essential logistics data [balance, issue, or loss /adjustments] on the Bin Card over the last six months?  <b>(INTERVIEWER: Verify by looking at the stock keeping records)</b></p>	a. Both balance and issue for the same transaction	b. Balance (with out Issue)	c. Loss/ adjustment

217.	<p>For facilities submitting commodity related reports, whom do they send reports to?  (e.g. RRF and HPMRR)  <b>(MULTIPLE RESPONSE)</b>  <b>[Scripter: Deactivate response item 5 here at Q217 if coded 4 at Q105]</b></p>	EPSA	1
		RHB	2
		Zone	3
		Woreda	4
		Health center	5
		Don't know/not sure	6

**[Scripter: Q218-222 are to be asked if codes 1-4are selected at Q105]**

**[Scripter: Ask Q218 if code 1 is selected at Q213 (a); if code 2 is selected at Q213 (a), skip to 224]**

218.	Three times	1
	Two times	2

	During the past three review/reporting periods, how many times were you able to submit RRF excluding RRFs submitted for emergency orders? <b>(INTERVIEWER:(1) Verify as per the SOP during the past six months [i.e. every two months]; (2) It could be electronic or printed RRF for HCMIS facilities)</b>	One time	3
		Never submitted	4

**[Scripter: If code 1 is selected at Q218, skip to Q220]**

219.	What is the reason you did not submit the RRF for any of the past three review/reporting periods? <b>(INTERVIEWER:(1) Do not read answer options; (2) probe)</b> <b>(MULTIPLE RESPONSE)</b>	Too much job burden	1
		Don't have the forms	2
		Difficulties in submitting reports	3
		Lack of knowledge or skill to complete the forms	4
		Other (specify)	5

**[Scripter: Ask Q220 if codes 1, 2, or 3 is selected at Q218]**

220.	During the past three review/reporting periods, how many times were you able to submit the RRF on time? <b>(INTERVIEWER:(1) Verify if the RRF was completed within 10 days after the reporting period (2) It could be electronic or printed RRF for HCMIS facilities)</b> <b>[Scripter: Activate codes 1, 2, 3, &amp; 4 only if code 1 is selected at Q218; activate codes 2, 3, &amp; 4 only if code 2 is selected at Q218; activate code 3&amp; 4 only if code 3 is selected at Q218 ]</b>	Three times	1
		Two times	2
		One time	3
		Never submitted on time	4

**[Scripter: If code 1 is selected at Q220, skip to Q222]**

221.	What is the reason you did not submit the RRF on time for any of the past review/reporting periods? <b>(MULTIPLE RESPONSE)</b>	Takes too long to compile the report	1
		Don't have the forms	2
		Approval process at facility level takes too long	3
		Difficulties in submitting reports	4

		Lack of knowledge or skill to complete the forms	5
		Other (specify)	6

**[Scripter: If code 2 or 3 is selected at Q107, deactivate ART at Q222]**

<b>222.</b>	How complete is the most recent RRF for the past three review/reporting period? <b>(INTERVIEWER: Write number of items with relevant columns filled; refer to the most recent form identified at Q214)</b> <b>[Scripter: The value under "f" should be less than or equal to the minimum value under a, b, c, d, &amp; e]</b>		Beginning balance (a)	Quantity received (b)	Ending Balance (c)	Calculated consumption (d)	Quantity needed to reach max (e)	Complete RRF (f)
		1. ART						
		2. TB						
		3. FP						
		4. Malaria						
	5. MNCH							

**[Scripter: Q224 is to be asked if code 1-4 are selected at Q105]**

**[Scripter: Deactivate ART if code 2 or 3 is selected at Q107]**

<b>224.</b>	a. Does the facility use IFRR within the last six months?		a. Uses IFRR	b. Posted IFRR schedule	c. IFRR schedule (in days)	d. Number of IFRR
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<p><b>(INTERVIEWER: Verify if there is at least one IFRR was completed within the last six months)</b></p> <p>b. Is the IFRR schedule posted? <b>(INTERVIEWER: Verify if the schedule is posted or available as a document)</b> <b>[Scripter: Ask Q224 (b) if code 1 is selected at Q224 (a)]</b></p> <p>c. What is the IFRR schedule in days? <b>(INTERVIEWER: Record schedule in days)</b> <b>[Scripter: Ask Q224 (c) if code 1 is selected at Q224 (a)]</b></p> <p>d. What is the number of IFRR in the last six months? <b>[Scripter: Ask Q224 (d) if code 1 is selected at Q224 (a)]</b> <b>(INTERVIEWER: Count the number of IFRRs prepared and submitted in the last six months)</b></p>		Yes	No	Yes	No		
		1	2	1	2		
	ART						
	OPD pharmacy						
	TB						
	FP						
MNCH							
Laboratory							

225.	a. How many emergency orders were placed in the past 6 months (using phone, RRF, HPMRR, letter, and others)? <b>[Scripter: Skip to Q226 if the value is zero]</b>		
	b. Describe the means through which the orders were placed. <b>(INTERVIEWER: If code 2 or 3 is selected, verify)</b> <b>(MULTIPLE RESPONSE)</b> <b>[Scripter: Deactivate response item 2 here at Q225 if coded 5 at Q105]</b> <b>[Scripter: Deactivate response item 3 here at Q225 if coded 1-4 at Q105]</b>	Phone	1
		RRF	2
		HPMRR	3
		Letter	4
		Other (specify)	5

**[Scripter: Q226 – 230 is to be asked if code 4 is selected at Q105]**

226.	a. Does this health center supervise health posts? <b>[Scripter: Skip to Q231 if code 2 is selected at Q226 (a)]</b>	Yes	No
		1	2
	b. How many health posts does the health center supervise? <b>[Scripter: Ask Q226 (b) if code 1 is selected at Q226 (a)]</b>	1. Urban	
		2. Rural	

227.	<p>How many health posts submitted their HPMRR to the health center during the past three review/reporting periods?  <b>(INTERVIEWER: Check the submitted HPMRR and record the number of health posts)</b>  <b>[Scripter: The sum of the number of health posts that submitted 3, 2, 1, and 0 report should be equal to the sum of urban and rural health posts at Q226(b)]</b></p>	a. No. of health post that submitted 3 reports	
		b. No. of health post that submitted 2 reports	
		c. No. of health post that submitted 1 report	
		d. No. of health post that submitted 0 report	

**[Scripter: Ask Q228-230 if the sum of the values at Q227 (a), (b), & (c) is >0; if the sum of the values at Q227 (a), (b), & (c) is equal to 0, skip to Q231]**

228.	<p>For each health post supervised,</p> <p>a. Record the location (urban/rural)</p> <p>b. Check the most recent HPMRR received and record the reporting period</p> <p>c. Record the date the HPMRR was received/prepared</p>
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229.	<p>How complete is the most recent HPMRR submitted by the health posts, <b>for the part completed by the health posts</b> (for the past three review/reporting periods)? [Q229 (a)-(d)]</p>
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230.	<p>How complete is the most recent HPMRR submitted by the health posts, <b>for the part completed by the health center</b> (for the past three review/reporting periods)? [Q230 (a)-(c)]</p>
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Health post	Location 228(a)		Reporting period (MMM/YYYY)		Date received (DD/MMM/YYYY) 228(c)	Beginning balance 229(a)	Quantity received 229(b)	Ending Balance 229(c)	Complete HPMRR 229(d)	Calculated consumption 230(a)	Quantity needed to reach max	Complete HPMRR 230(c)
	Urban	1	228(b)									
	Rural	2	From	To								
HP 1												
HP 2												



HP 3											
HP 4											
HP 5											
HP 6											
HP 7											
HP 8											
HP 9											
HP 10											

**SUPPLIER AND SUPPLY DECISION**

*[Scripter: Q231 - 233 is to be asked if code 1-5 are selected at Q105]*

*[Scripter: If code 2 or 3 is selected at Q107, deactivate ART at Q231]*

231.	What are the primary immediate sources (the most common) of supply for the following programs at this facility? <b>(SINGLE RESPONSE FOR EACH)</b> <i>[Scripter: If code 5 is selected at Q105, deactivate codes a &amp; h at Q231]</i> <i>[Scripter: If code 1-4 is selected at Q105, deactivate "Health center" at Q231]</i>		EPSA	RHB	Zone / Sub City	WoH O	Health center	NGO	Private	Other (specify)	N/A (do not manage)
		a. ART	1	2	3	4	5	6	7	8	9
		b. RTK(HIV)	1	2	3	4	5	6	7	8	9
		c. TB	1	2	3	4	5	6	7	8	9
		d. FP	1	2	3	4	5	6	7	8	9
		e. Malaria	1	2	3	4	5	6	7	8	9
		f. MNCH	1	2	3	4	5	6	7	8	9
		h. RDF (Budget)	1	2	3	4	5	6	7	8	9

*[Scripter: If code 2 or 3 is selected at Q107, deactivate ART at Q232]*

232.	Who determines the quantities of commodities ordered? <b>(SINGLE RESPONSE FOR EACH)</b>		Health facility itself	Supplier
		a. ART	1	2

<p><b>[Scripter: Deactivate the program items for which N/A (code 9) is selected at Q231]</b></p> <p><b>[Scripter: If code 5 is selected at Q105, deactivate codes a, &amp; h at Q232]</b></p>	b. RTK(HIV)	1	2
	c. TB	1	2
	d. FP	1	2
	e. Malaria	1	2
	f. MNCH	1	2
	h. RDF (Budget)	1	2

**[Scripter: If code 2 or 3 is selected at Q107, deactivate ART at Q233]**

<p><b>233.</b></p> <p>Does the facility usually get the quantities of products it requests for the following programs? <b>(SINGLE RESPONSE FOR EACH)</b></p> <p><b>[Scripter: Deactivate the program items for which N/A (code 9) is selected at Q231]</b></p> <p><b>[Scripter: If code 5 is selected at Q105, deactivate codes a, &amp; h at Q233]</b></p>		Always (> 80%)	Most of the time (60-80%)	Rarely (40-60%)	Never (< 40%)	
	a. ART	1	2	3	4	
	b. RTK(HIV)	1	2	3	4	
	c. TB	1	2	3	4	
	d. FP	1	2	3	4	
	e. Malaria	1	2	3	4	
	f. MNCH	1	2	3	4	
	h. RDF (Budget)	1	2	3	4	

**[Scripter: Q234 is to be asked if code 1-4 are selected at Q105]**

<p><b>234.</b></p> <p>(a) Check the most recent STV for a regular order and record the date</p> <p>(b) Check the corresponding Model 19 and record the date</p> <p>(c) Check the corresponding RRF and record the date</p> <p><b>(INTERVIEWER: Take a picture of the most recent STV and its corresponding Model 19 and RRF)</b></p> <p><b>[Scripter: Allow three pictures to be taken here]</b></p>		Date DD/MMM/YY YY
	a. STV	
	b. Model 19	
	c. RRF	

**TRANSPORTATION AND MODES OF DELIVERY**

**[Scripter: Q235 is to be asked if code 1-5 are selected at Q105]**

**[Scripter: Deactivate ART if code 2 or 3 is selected at Q107]**

<p><b>235.</b> For each of the programs, who is transporting commodities to your facility in the majority of the time? <b>(SINGLE RESPONSE)</b> <b>[Scripter: (1) Deactivate the program items for which N/A (code 9) is selected at Q231]</b> <b>[Scripter: Deactivate Q235 (a) and (h) if coded 5 at Q105]</b></p>		Facility picks up	Supplier delivers
	a. ART	1	2
	b. RTK(HIV)	1	2
	c. TB	1	2
	d. FP	1	2
	e. Malaria	1	2
	f. MNCH	1	2
	h. RDF (Budget)	1	2

**[Scripter: Ask Q236 if code 1 (facility pick up) is selected for any of the product groups (a-h) at Q235; if not skip to Q237]**

<p><b>236.</b> If the facility collects the commodity, what type of transportation is most often used? <b>(SINGLE RESPONSE)</b></p>	Facility vehicle	1
	Public transport	2
	Rental vehicle	3
	Motorcycle	4
	Bicycle	5
	On foot	6
	Animal	7
	Cart	8
	Other (specify)	9
	Don't know/not sure	10

**[Scripter: Q237 is to be asked if code 1 is selected at Q109 (a)]**

<p><b>237.</b> Was the most recent EPSA delivery accompanied by a Pharmacy professional?</p>	Yes	1
	No	2

		Don't know/not sure	3
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**COLD CHAIN**

**(INTERVIEWER: For health centers and hospitals, this needs to be done at the pharmacy store and at the EPI/MCH unit)**

**COLD CHAIN AT STORE**

238.	1. Does the facility have refrigerators dedicated for vaccines in the store?	Store		
		Yes	1	
		No	2	
	2. Number of refrigerators by model <b>[Scripter: (1) If code 2 is selected at Q238 (1) , close this section and skip to section three;  (2) If code 1 is selected at Q238 (1), ask Q238 (2)]</b>	Model	Functiona l	Non- funcio nal
		MK 304, Vestfrost		
		TCW 3000, Dometic		
		BFRV 55, SunDazer		
SDD HTC 60, Haier Medical				
Other models				

239.	Record the number of functional refrigerators by type of the most used energy source <b>(INTERVIEWER: If refrigerator uses a mix of electric and any other source of energy, choose the one used most of the time)</b> <b>[Scripter: The sum of refrigerators at Q239 should be equal to the sum of FUNCTIONAL refrigerators at Q238 (2)]</b>		Store
		1. Electric	
		2. Solar	
		3. Kerosene	
		4. Other (specify)	

240.		Store
------	--	-------

	<p>Out of functional refrigerators, how many have a functional thermometer or other temperature monitoring device?</p> <p><b>[Scripter: The value at Q240 should be <math>\leq</math> the sum of FUNCTIONAL refrigerators at Q238 (2)]</b></p>	
--	--	--

**[Scripter: If there is no refrigerator with functional thermometer at Q240, skip to Q244]**

241.	<p>Record the actual temperature using the internal thermometer/temperature monitoring device inside the refrigerator at the time of visit.</p> <p><b>[Scripter: Activate cells at Q241 based on the total refrigerators with functional thermometers at Q240]</b></p>		Store (°C)
		Refrigerator (1)	
		Refrigerator (2)	
		Refrigerator (3)	
		Refrigerator (4)	
		Refrigerator (5)	

**[Scripter: Ask Q242 if the value is  $> 0$  at Q240 otherwise skip to Q244]**

242.	For every functional refrigerator with functional thermometer/temperature monitoring device, how many have a temperature recording chart available?	Store

**[Scripter: If there is no refrigerator with a temperature recording chart at Q242, skip to Q244]**

243.	For how many of the refrigerators is the temperature chart up-to-date? (To be up-to-date, there must be an entry for the month until the day before the visit including Saturdays, Sundays, and Holidays.)	Store

**[Scripter: Skip to Q245 if coded 0 at Q239(3)]**

244.	In general, is kerosene available for kerosene refrigerators?	Store
		Yes   No

		1	2
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245.	Is the cold storage space enough to carry a one month supply?	Store	
		Yes	No
		1	2

### SECTION III. STORAGE CONDITIONS

***(INTERVIEWER: Ask Q301-Q314 for products that are stored in store rooms and ready to be issued or distributed to clients. If there is more than one store, assess the main store)***  
***[Scripter: Ask Q301-Q313 to all facility types i.e. codes 1-5 at Q105; ask Q314 only for codes 1-4 at Q105]***

		Yes	No
301.	Pharmaceuticals are arranged and organized according to a logical categorization: e.g. by program, alphabetically, pharmacological, etc.	1	2
302.	Products are protected from extreme heat. <b><i>(INTERVIEWER: Check availability of ventilators and air conditioners in the store in hot areas and functional refrigerator for cold chain products)</i></b>	1	2
303.	Products are protected from direct sunlight.	1	2
304.	Are unwanted items (damaged or expired drugs, non-pharmaceutical items, etc.) in the store room separated from the usable stock?	1	2
305.	Products are arranged so that identification labels, expiry dates, and/or manufacturing dates are visible. <b><i>(INTERVIEWER: If more than 75 percent of the shelf area is organized (of the tracer products managed), code Yes)</i></b>	1	2
306.	Products are stored and organized in a manner which facilitates use of First-to-Expire, First-out. <b><i>(INTERVIEWER: If more than 75 percent of the shelf area is organized (of the tracer products managed), code Yes)</i></b>	1	2
307.	Cartons and products are protected from water during all seasons (e.g. no leaking roof and wall, shelf having clearance from the floor, etc.).	1	2
308.	The storeroom is maintained in good condition (clean, no trash, sturdy shelves, and boxes well-organized).	1	2

309.	The current space and organization is sufficient for existing products and reasonable expansion (i.e., receipt of expected product deliveries to meet the existing demand: <b>2 months for hospitals and health center, and 1 month for health post).</b>	1	2
310.	Storage area is secured with a lock and key, but is accessible during normal working hours by authorized personnel.	1	2
311.	Store has signage indicating access is limited to authorized personnel.	1	2
312.	Storage area is visually free from harmful insects, rodents, or other animals (excluding cats). <b>(INTERVIEWER: Check the storage area for traces of bats and/or rodents [droppings or insects])</b>	1	2
313.	Cartons and products are in good condition, not crushed due to mishandling. If cartons are open, check if products are wet or cracked due to heat/radiation.	1	2
314.	Narcotic and psychotropic substances are stored in a separate locked area/drawer.	1	2

#### SECTION IV. PRODUCT AVAILABILITY AND LHMIS DATA QUALITY

##### STOCK STATUS IN STORE

**[Scripter: If 212 (a) is coded 2, ask only Q 401, Q 402, Q 403, Q 408, Q413, Q414, Q415, Q416, Q417, Q418]**

401.	Name of all tracer products that will be counted <b>EXCLUDE Pentavalent (DTP + HepB + Hib) vaccine</b> <b>[Scripter: Insert products provided in a separate sheet as per facility level (Q105)]</b>		
402.	Unit of count for the product <b>[Scripter: Insert the unit of count provided in a separate sheet]</b>		
403.	Record whether or not the product is managed at this facility.	Yes	1

	<p><b>[Scripter: If the product is not managed (code 2), skip to the next product]</b></p> <p><b>[Scripter: If Giemsa stain solution - [Bottle] (i.e. code 48 on the tracer list) is managed at the facility (code 1 at Q403), ask only Q414, Q415, Q418, Q427, Q428, Q429, and Q430]</b></p> <p><b>(INTERVIEWER: For products that have a priority option, follow these steps:</b></p> <p><b>Step 1: check/ask whether the 1<sup>st</sup> priority product is available at the store; if available, select the 1<sup>st</sup> product.</b></p> <p><b>Step II: If the 1<sup>st</sup> product is not available at the store, check/ask whether the 2<sup>nd</sup> priority product is available at the store; if available, select the 2<sup>nd</sup> product.</b></p> <p><b>Step III: Follow this procedure until all the products are exhausted/finished.</b></p> <p><b>Step IV: If all of the priority products are not available, take the 1<sup>st</sup> priority product)</b></p>	No	2
404.	<p>Was there use of bin card within the last six months (manual or electronic)?</p> <p><b>(INTERVIEWER: Verify use for each of the product managed by the facility)</b></p> <p><b>[Scripter: If No (code 2) is coded, ask only Q408, Q413, Q414, Q415, Q416, Q417, Q418]</b></p>	Yes	1
		No	2
405.	<p>Bin card type</p> <p><b>[Scripter: Ask this question if code 1 is selected at Q108]</b></p>	Manual	1
		Electronic	2
		Both	3
406.	<p>Has the bin card been updated within the last 30 days?</p> <p><b>(INTERVIEWER: If the bin card was last updated with any balance and the facility has no transaction, consider the bin card as up-to-date)</b></p>	Yes	1
		No	2
407.	<p>Record the latest balance from the bin card.</p> <p><b>(INTERVIEWER: If the unit of measure in the bin car is different from that of the tracer list, make sure to convert it to the unit of measure specified in the tracer list)</b></p>		
408.	<p>Has the facility had any stock out of the product within the last 6 months?</p> <p><b>[Scripter: If No (code 2) is selected, skip to Q411]</b></p>	Yes	1
		No	2



409.	Record how many times the product stocked out within the last 6 months, according to bin cards. <b>[Scripter: Activate Q409 if code 1 is selected at Q404]</b> <b>[Scripter: The value should only be 1-180]</b>		
410.	Record the total number of days the product was stocked out within the last 6 months. <b>[Scripter: Activate Q410 if code 1 is selected at Q404]</b> <b>[Scripter: The value should only be 1-180]</b>		
411.	Record the quantity of product issued from the storeroom within the last 6 months. <b>[Scripter: Activate Q411 if code 1 is selected at Q404]</b> <b>(INTERVIEWER: If the unit of measure in the bin car is different from that of the tracer list, make sure to convert it to the unit of measure specified in the tracer list)</b>		
412.	Record the number of days the issue data represents (6 months or less). <b>[Scripter: Activate Q412 if code 1 is selected at Q404]</b> <b>[Scripter: The value should only be 1-180]</b> <b>(INTERVIEWER: (1) When there is positive balance at the last transaction, calculate and record the number of days between the first and the last issue dates; (2) When there is 0 balance at the last transaction, calculate and record the number of days between the first issue date and the date of the visit)</b>		
413.	Record the physical count in the storeroom. <b>(INTERVIEWER: Make sure to use the same unit of measure as specified in the tracer list)</b>		
414.	Is the store experiencing a stock out of the product on the day of the visit? <b>(INTERVIEWER: Visually verify that usable products are in stock.)</b>	Yes	1
		No	2
415.	Which dispensing unit(s) could the product be available? <b>(MULTIPLE RESPONSE)</b> <b>[Scripter: Ask Q415 if code 1 is selected at Q414]</b> <b>[Scripter: Deactivate Q415 if code 5 is selected at Q105]</b>	OPD	1
		ART	2
		MCH/FP	3
		TB	4
		IPD	5
416.	Do you have any quantity expired in the store? <b>(INTERVIEWER: Verify)</b>	Yes	1
		No	2

417.	If there are products that are near expiry (within one month), record quantity. <b>(INTERVIEWER: Make sure to use the same unit of measure as specified in the tracer list)</b>		
418.	For any product that stocked out in the last six months (including the day of the visit), please note the main reason for each product. <b>(SINGLE RESPONSE)</b> <b>[Scripter: Only ask Q418 if code 1 is selected at Q408 or Q414]</b>	No demand	1
		Not requested	2
		Not resupplied	3
		Other (specify)	4
		Don't know/not sure	5

Product	Units of count	Managed at this facility?	Bin card available?	Bin card type	Bin card updated?	Balance on bin card (quantity)	Stock out for the most recent 6 months	No. of stock outs	Total number of days stocked out	Total issued (most recent 6 months)	Number of days of issued data available	Physical inventory - store room (quantity)	Stock out today?	Dispensing unit(s) the product could be available	Availability of expired product	Near expiry products	Reason for stock out
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418
Product 1																	
Product 2																	
Product 3																	
....																	
....																	
....																	
Product 36																	

## LMIS DATA QUALITY (AT THE STORES)

<b>419.</b>	Name of products and unit of count <i>[Scripter: Insert products the facility manages i.e. code 1 at Q403]</i>		
<b>420.</b>	Check if bin cards and RRF or HPMRR were in use (for the past three review/reporting periods). <i>[Scripter: Ask this question for products (1) if code 1 is selected at Q213 (a) and code 1 is selected at Q404; or (2) if code 1 is selected at Q213 (c) and code 1 is selected at Q404.. Otherwise, skip to the next product]</i>	Yes	1
		No	2
<b>421.</b>	Get the most recent bin card and RRF or HPMRR report (for the past three review/reporting periods) showing the selected products, and record the stock on hand from the reports. <i>(INTERVIEWER: Make sure to use the most recent reporting period common for the bin card, and RRF, or HPMRR)</i> <i>[Scripter: Ask Q421 (a) &amp; (b) if code 1 is selected at Q420]</i>		
<b>422.</b>	Reason for discrepancy <i>[Scripter: Ask this question if the value at Q421(a) is different from Q421(b) and display the discrepancy]</i>	Calculation error	1
		Not updated	2
		Other (specify)	3

Product and unit of count	Were the formats in use?	Ending balance according to the most recent RRF/HPMRR report	Ending balance from bin card for the same time as RRF/HPMRR report	Reason for discrepancy
<b>419</b>	<b>420</b>	<b>421 (a)</b>	<b>421 (b)</b>	<b>422</b>

## LINE FILL RATE FOR TRACER PRODUCTS

*[Scripter: Ask this question if codes 1-4 are selected at Q105]*

423.	Name of products and unit of count <b>[Scripter: Insert products the facility manages i.e. code 1 at Q403]</b>		
424.	Check if the Model 19 and/or STV, and RRF were in use (for the past three review/reporting periods). <b>(INTERVIEWER: Use STV as a support document to Model 19 or when Model 19 is not available)</b> <b>[Scripter: Ask this question if code 1 is selected at Q213 (a) &amp; (b)]</b>	Yes	1
		No	2
425.	a. Enter the quantity ordered from the RRF 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). b. Enter the quantity received against the above RRF from the corresponding Model 19/STV <b>(INTERVIEWER: Make sure to use the same unit of measure as specified in the tracer list for Q425 (a) &amp; (b))</b>		

Product and unit of count	Were the formats in use?	Quantity ordered from RRF	Quantity received from Model 19/STV
<b>423</b>	<b>424</b>	<b>425 (a)</b>	<b>425 (b)</b>

**SECTION V. PRODUCT WASTAGE, EPSA SHARE, AND TURNOVER**

*[Scripter: Ask this section if code 1 or 2 is selected at Q108b]*

<b>500.</b>	When did the facility start using HCMIS? (DD/MMM/YYYY) <i>[Scripter: The year value should be 2000-2010]</i>	
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	<i>RDF (Budget)</i>			
	<i>Program</i>			
	<i>RDF (Budget)</i>			
	<i>Program</i>			
	<i>RDF (Budget)</i>			
	<i>Program</i>			

<b>504.</b>	EPSA's share from total supplied in a year <i>(INTERVIEWER: Select "No data" if there is no data)</i>		<i>Hamle 1, 2006-Sene 30, 2007</i>		<i>Hamle 1, 2007-Sene 30, 2008</i>		<i>Hamle 1, 2008-Sene 30, 2009</i>		
			<i>Program</i>	<i>RDF</i>	<i>Program</i>	<i>RDF</i>	<i>Program</i>	<i>RDF</i>	
		<i>Total value (EPSA only)</i>							
		<i>Total value (All suppliers)</i>							

<b>505.</b>	Turnover		<i>Hamle 1, 2006-Sene 30,2007</i>	<i>Hamle 1, 2007-Sene 30,2008</i>	<i>Hamle 1, 2008-Sene 30,2009</i>
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		Program	RDF	Program	RDF	Program	RDF
	Beginning inventory (value) <i>(INTERVIEWER: Select "No data" if there is no data)</i>						
	Ending inventory (value) <i>(INTERVIEWER: Select "No data" if there is no data)</i>						
	Issued (value) <i>(INTERVIEWER: Select "No data" if there is no data)</i>						

## EPI SECTION

***[Scripter: Ask this section to all facility types, i.e. for codes 1-5 at Q105]***

<b>200EPI</b>	Which department is responsible for managing vaccines (completing VRF, requisition, reporting, and receiving) from EPSA or other higher levels? <b>(INTERVIEWER: If code 1 is selected, ask the store manager. If code 2 is selected, ask the EPI coordinator.)</b>	Store	1
		EPI	2

***[Scripter: Deactivate Q201EPI if code 1 is selected at Q200EPI].***

<b>201EPI</b>	Interviewee information (11) <b><i>(INTERVIEWER: 1. Ask this question to EPI Coordinator or their delegates. 2. For Health posts ask the person in charge of vaccine (HEWs or other professionals. If the same person manages the store repeat the person's contact)</i></b>	
	a. Name	
	b. Position	

	c. Telephone <b>[Scripter: The number of digits should be limited to 10]</b>		
	d. Number of years & months of experience at the facility <b>[Scripter: The month value should be limited to 0-11]</b>	Year	
		Month	

<b>109EPI</b>	c. What is the most common vaccine delivery modality to this facility? <b>(SINGLE RESPONSE)</b>	Woreda delivers to the facility	1
		Facility collects from woreda	2
		Zone delivers to the facility	3
		Facility collects from zone	4
		EPSA hub delivers to the facility	5
		Facility collects from EPSA	6
		Other (specify)	7

#### FORMATS AVAILABILITY AND USE AT EPI

<b>210EPI</b>	Are the following formats available at the facility (i.e., availability of blank formats for future use)? <b>(INTERVIEWER: Select "yes" only after verifying availability)</b> <b>(INTERVIEWER: Formats could be electronic or manual)</b>		Yes	No
		g. VRF	1	2
		h. Vaccine Ledger/Register	1	2

<b>212EPI</b>	Which of the following recording formats has the facility used within the last six months? <b>(INTERVIEWER: Verify if there is at least one transaction over the last six months)</b>		Yes	No
		b. Vaccine Ledger/Register	1	2

#### REPORTING AND ORDERING EPI

	Does the facility use VRF?		Yes	No
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213E PI	<b>(INTERVIEWER: Verify if the facility has at least one completed VRF for any of the past three review/reporting period)</b>	b. VRF	1	2
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**[Scripter: Answer 214EPI only if code 1 is selected at Q213EPI]**

214E PI	Ask to see the most recent VRF completed by the facility. Record the reporting period and reporting date. <b>(INTERVIEWER: Ask the interviewee to show you the completed VRF)</b>	b. VRF	1.Reporting period (MMM/YYYY) From To	2.Reporting date (DD/MMM/YYYY)
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**[Scripter: Ask Q216EPI if code 1 is selected at Q212EPI]**

216E PI	Did the facility record balance, issue, or loss/adjustment on the Vaccine Ledger over the last six months? <b>(INTERVIEWER: Verify by looking at the stock keeping records)</b>	a. Both Balance and Issue for the same transaction	b. Balance (without Issue)	c. Loss/adjustment			
		Yes	No	Yes	No	Yes	No
		1	2	1	2	1	2

**[Scripter: Q223EPI is to be asked if code 1 is selected at Q213EPI]**

223E PI	How complete is the most recent VRF? <b>(INTERVIEWER: Write number of items with relevant columns filled)</b> <b>[Scripter: The value under "o" should be less than or equal to the minimum value under e, f, g, h, i, j, k, &amp; m]</b>		Balance at the beginning of last supply period (e)	Received during last supply period (f)	Used or dispatched during last supply period (g)	Doses discarded (h)	Current balance (i)	Requirement for the next supply period (j)	Requested amount (k)	Vaccinations given since the last supply (m)	Complete VRF (o)
		VRF									

**SUPPLIER AND SUPPLY DECISION EPI**

231E PI	What are the primary immediate sources (the most common) of supply for the following programs at this facility? <b>(SINGLE RESPONSE)</b> <b>[Scripter: If code 1-4 is selected at Q105, deactivate "Health center" at Q231EPI]</b>		EPSA	RHB	Zone / Sub City	WoH O	Health center	NGO	Private	Other (specify)	N/A (do not manage)
		g. Vaccine	1	2	3	4	5	6	7	8	9

**[Scripter: If N/A (code 9) is selected at Q231EPI skip to 238EPI]**

232E PI	Who determines the quantities of commodities ordered? <b>(SINGLE RESPONSE)</b>		Health facility itself	Supplier
		g. Vaccine	1	2

233E PI	Does the facility usually get the quantities of products it requests for the following programs? <b>(SINGLE RESPONSE)</b>		Always (> 80%)	Most of the time (60-80%)	Rarely (40-60%)	Never (< 40%)	
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		g. Vaccine	1	2	3	4	
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### TRANSPORTATION AND MODES OF DELIVERY EPI

<b>235E PI</b>	For each of the programs, who is transporting commodities to your facility in the majority of the time? <b>(SINGLE RESPONSE)</b>		Facility picks up	Supplier delivers
		g. Vaccine	1	2

### PRODUCT AVAILABILITY AND LMIS DATA QUALITY FOR VACCINE

#### STOCK STATUS IN STORE/EPI

*[Scripter: If 212EPI is coded 2, ask only Q 401EPI, Q 402EPI, Q 403EPI, Q 408EPI, Q413EPI, Q414EPI, Q415EPI, Q416EPI, Q417EPI, Q418EPI]*

<b>401E PI</b>	Name of product and unit of count <b><i>Pentavalent vaccine (DTP + HepB + Hib) Vial</i></b>		
<b>403E PI</b>	Record whether or not the product is managed at this facility. <b><i>[Scripter: If the product is not managed (code 2), skip to the next section]</i></b>	Yes	1
		No	2
<b>404E PI</b>	Was there use of Vaccine Ledger/Register within the last six months (manual or electronic)? <b><i>(INTERVIEWER: Verify use)</i></b> <b><i>[Scripter: If No (code 2) is coded, ask only Q408EPI, Q413EPI, Q414EPI, Q415EPI, Q416EPI, Q417EPI, Q418EPI]</i></b>	Yes	1
		No	2
<b>405E PI</b>	Vaccine Ledger/Register type <b><i>[Scripter: Ask this question if code 1 is selected at Q108]</i></b>	Manual	1
		Electronic s	2

		Both	3
406E PI	Has the Vaccine Ledger/Register been updated within the last 30 days? <i>(INTERVIEWER: If the Vaccine Ledger/Register was last updated with any balance and the facility has no transaction, consider the Vaccine Ledger/Register as up-to-date)</i>	Yes	1
		No	2
407E PI	Record the latest balance from the Vaccine Ledger/Register. <i>(INTERVIEWER: If the unit of measure in the Vaccine Ledger/Register is different from Vial, make sure to convert it to Vial)</i>		
408E PI	Has the facility had any stock out of the product within the last 6 months? <i>[Scripter: If No (code 2) is selected, skip to Q411EPI]</i>	Yes	1
		No	2
409E PI	Record how many times the product stocked out within the last 6 months, according to Vaccine Ledger/Register. <i>[Scripter: Activate Q409EPI if code 1 is selected at Q404EPI] [Scripter: The value should only be 1-180]</i>		
410E PI	Record the total number of days the product was stocked out within the last 6 months. <i>[Scripter: Activate Q410EPI if code 1 is selected at Q404EPI] [Scripter: The value should only be 1-180]</i>		
411E PI	Record the quantity of product issued from the storeroom within the last 6 months. <i>[Scripter: Activate Q411EPI if code 1 is selected at Q404EPI] (INTERVIEWER: If the unit of measure in the Vaccine Ledger/Register is different from Vial, make sure to convert it to Vial)</i>		
412E PI	Record the number of days the issue data represents (6 months or less). <i>[Scripter: Activate Q412EPI if code 1 is selected at Q404EPI] [Scripter: The value should only be 1-180] (INTERVIEWER: (1) When there is positive balance at the last transaction, calculate and record the number of days between the first and the last issue dates; (2) When there is 0 balance at the last transaction, calculate and record the number of days between the first issue date and the date of the visit)</i>		
413E PI	Record the physical count. <i>(INTERVIEWER: Make sure to use the same unit of measure as specified in the tracer list)</i>		
414E PI	Is the STORE/EPI experiencing a stock out of the product on the day of the visit? <i>(INTERVIEWER: Visually verify that usable products are in stock.)</i>	Yes	1
		No	2
	Where could the product be available?	EPI	7

<b>415E PI</b>		Store	8
<b>416E PI</b>	Do you have any quantity expired? <i>(INTERVIEWER: Verify)</i>	Yes	1
		No	2
<b>417E PI</b>	If there are products that are near expiry (within one month), record quantity. <i>(INTERVIEWER: Make sure to use Vial as a unit of measure)</i>		
<b>418E PI</b>	If vaccine is stocked out in the last six months (including the day of the visit), please note the main reason. <b>(SINGLE RESPONSE)</b> <i>[Scripter: Only ask Q418EPI, if code 1 is selected at Q408EPI or Q414EPI]</i>	No demand	1
		Not requested	2
		Not resupplied	3
		Other (specify)	4
		Don't know/not sure	5

Product and unit of count	Managed at this facility?	Bin card available?	Bin card type	Bin card updated?	Balance on bin card (quantity)	Stock out for the most recent 6 months	No. of stock outs	Total number of days stocked out	Total issued (most recent 6 months)	Number of days of issued data available	Physical inventory - store room (quantity)	Stock out today?	Where the product could be available	Availability of expired product	Near expiry products	Reason for stock out
401EPI	403EPI	404EPI	405EPI	406EPI	407EPI	408EPI	409EPI	410EPI	411EPI	412EPI	413EPI	414EPI	415EPI	416EPI	417EPI	418EPI
<i>Pentavalent vaccine (DTP + HepB + Hib) Vial</i>																

**LMIS DATA QUALITY (AT STORE/EPI)**

**[Scripter: Ask Q419EPI – 422EPI, if vaccine is managed, i.e. code 1 at Q403EPI]**

<b>419E PI</b>	Name of product and unit of count <b><i>Pentavalent vaccine (DTP + HepB + Hib) Vial</i></b>		
<b>420E PI</b>	Check if vaccine ledger were in use (for the past three review/reporting periods). <b><i>[Scripter: Ask this question if code 1 is selected at Q213EPI and code 1 is selected at Q404EPI, Otherwise, skip to Q423EPI]</i></b>	Yes	1
		No	2
<b>421E PI</b>	Get the most recent vaccine ledger and VRF report (for the past three review/reporting periods) showing Pentavalent vaccine (DTP + HepB + Hib) vaccine, and record the stock on hand from the reports. <b><i>(INTERVIEWER: Make sure to use the most recent reporting period common for the vaccine ledger and VRF)</i></b> <b><i>[Scripter: Ask Q421EPI (a) &amp; (b) if code 1 is selected at Q420EPI]</i></b>		
<b>422E PI</b>	Reason for discrepancy <b><i>[Scripter: Ask this question if the value at Q421EPI (a) is different from Q421EPI (b) and display the discrepancy]</i></b>	Calculation error	1
		Not updated	2
		Other (specify)	3

Product and unit of count	Were the formats in use?	Ending balance according to the most recent VRF report	Ending balance from vaccine ledger for the same time as VRF report	Reason for discrepancy
<b>419EPI</b>	<b>420EPI</b>	<b>421EPI (a)</b>	<b>421EPI (b)</b>	<b>422EPI</b>
<i>Pentavalent vaccine (DTP + HepB + Hib) Vial</i>				

**LINE FILL RATE FOR VACCINE**

**[Scripter: Ask Q423EPI – 425EPI, if EPI vaccine is managed i.e. code 1 at Q403EPI]**

**[Scripter: Ask this question if codes 1-4 are selected at Q105]**

<b>423E PI</b>	Name of product and unit of count <b><i>Pentavalent vaccine (DTP + HepB + Hib) Vial</i></b>		
<b>424E PI</b>	Check if the Model 19 and/or STV, and VRF were in use (for the past three review/reporting periods). <b><i>(INTERVIEWER: Use STV as a support document to Model 19 or when Model 19 is not available)</i></b> <b><i>[Scripter: Ask this question if code 1 is selected at Q213EPI]</i></b>	Yes	1
		No	2
<b>425E PI</b>	a. Enter the quantity ordered from the VRF 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). b. Enter the quantity received against the above VRF from the corresponding Model 19/STV <b><i>(INTERVIEWER: Make sure to use vial as a unit of measure)</i></b>		

Product and unit of count	Were the formats in use?	Quantity ordered from VRF	Quantity received from Model 19/STV
<b>423EPI</b>	<b>424EPI</b>	<b>425EPI (a)</b>	<b>425EPI (b)</b>
<i>Pentavalent vaccine (DTP + HepB + Hib) Vial</i>			

**COLD CHAIN AT EPI**

**(INTERVIEWER: Ask the cold chain questions to the EPI coordinator).**

**[Scripter: Activate Q201EPI if code is 1 selected at Q200EPI].**



<b>201E PI</b>	Interviewee information (11) <b>(INTERVIEWER: 1. Ask this question to EPI Coordinator or their delegates. 2. For Health posts ask the person in charge of vaccine (HEWs or other professionals. If the same person manages the store repeat the person's contact)</b>		
	a. Name		
	b. Position		
	c. Telephone <b>[Scripter: The number of digits should be limited to 10]</b>		
	d. Number of years & months of experience at the facility <b>[Scripter: The month value should be limited to 0-11]</b>	Year	

<b>204E PI</b>	What is the highest qualification of the person managing vaccines at the EPI department?	b. Qualification	1. Masters
			2. Bachelor degree
			3. Diploma (1-4 level)
			4. Other (specify)

<b>238E PI</b>	1. Does the facility have refrigerators dedicated for vaccines at EPI?		Yes	1
			No	2
	2. Number of refrigerators by model in EPI <b>[Scripter: If code 2 is selected at Q238 EPI (1), close this section]</b>	Model	Functional	Non-functional
		MK 304, Vestfrost		
		TCW 300, Dometic		
		BFRV 55, SunDazer		
		SDD HTC 60, Haier Medical		
Other models				

<b>239E PI</b>	Record the number of functional refrigerators by type of the most used energy source in EPI/MCH		EPI/MCH
		1. Electric	

	<b>(INTERVIEWER: If refrigerator uses a mix of electric and any other source of energy, choose the one used most of the time)</b> <b>[Scripter: The sum of refrigerators at Q239EPI should be equal to the sum of FUNCTIONAL refrigerators at Q238 EPI (2)]</b>	2. Solar	
		3. Kerosene	
		4. Other (specify)	

<b>240E PI</b>	Out of functional refrigerators, how many have a functional thermometer or other temperature monitoring device? <b>[Scripter: The value at Q240EPI should be &lt;= the sum of FUNCTIONAL refrigerators at Q238EPI (2)]</b>	EPI/MCH

**[Scripter: If there is no refrigerator with functional thermometer at Q240EPI, skip to Q244EPI]**

<b>241E PI</b>	Record the actual temperature using the internal thermometer/temperature monitoring device inside the refrigerator at the time of visit. <b>[Scripter: Activate cells at Q24EPI based on the total refrigerators with functional thermometers at Q240EPI]</b>		EPI/MCH(°C)
		Refrigerator (1)	
		Refrigerator (2)	
		Refrigerator (3)	
		Refrigerator (4)	
		Refrigerator (5)	

**[Scripter: Ask Q242EPI if the value is > 0 at Q240EPI; otherwise skip to Q244EPI]**

<b>242E PI</b>	For every functional refrigerator with functional thermometer/temperature monitoring device, how many have a temperature recording chart available?	EPI/MCH

**[Scripter: If there is no refrigerator with a temperature recording chart at Q242EPI, skip to Q244EPI]**

		EPI/MCH
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<b>243E PI</b>	For how many of the refrigerators is the temperature chart up-to-date? (To be up-to-date, there must be an entry for the month until the day before the visit including Saturdays, Sundays, and Holidays.)	
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**[Scripter: Skip to Q245EPI if coded 0 at Q239EPI (3)]**

<b>244E PI</b>	In general, is kerosene available for kerosene refrigerators?	EPI/MCH	
		Yes	No
		1	2

<b>245E PI</b>	Is the cold storage space enough to carry a one month supply?	EPI/MCH	
		Yes	No
		1	2

<b>246E PI</b>	What is the facility's estimated live birth for the fiscal year 2010 (full year)?	
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**SECTION VII. SUPPORTIVE SUPERVISION**

**(INTERVIEWER: ASK section 7 to the Pharmacy head or their delegate)**

<b>701.</b>	When was the last time that this facility received a supervision visit that included supply chain, logistics or commodity management? <b>(SINGLE RESPONSE)</b>	Within the last month	1
		1-3 months ago	2
		3-6 months ago	3
		More than 6 months ago	4
		Never received	5
		Can't remember/don't know	6

**[Scripter: Skip to Q427 if codes 5 & 6 are selected]**

<b>702.</b>	Who provided the most recent/last supportive supervision visit? <b>(SINGLE RESPONSE)</b>	EPSA	1
		RHB	2
		Woreda	3
		Zone	4

		Integrated	5
		Partner (e.g. NGOs)	6
		Hospitals	7
		Health centers	8
		Other (specify)	9
		Can't remember/don't know	10

		Yes	No
<b>703.</b>	a. Was feedback provided after the most recent supportive supervision?	1	2
	b. Are there any remedial actions taken for identified gaps during the most recent supportive supervision?	1	2

		Yes	No	
<b>704.</b>	What has changed as a result of the most recent supportive supervision?	a. Improved availability	1	2
		b. Improved recording practices	1	2
		c. Improved storage conditions	1	2
		d. Improved reporting	1	2
		e. Minimized wastage (expiry, damage, & losses)	1	2
		f. Other specify	1	2

### STOCK AVAILABILITY IN DISPENSING UNIT

**[Scripter: Ask Q427-Q430 if code 1-4 is selected at Q105]**

<b>427.</b>	Product name and unit of count for all tracer products stocked out at store(s). <b>[Scripter: Only display products with stock out at Q414]</b>		
<b>428.</b>	<b>Scripter: For each product, display the dispensing units where they could be available (separated by comma) according to Q415.</b>		
<b>429.</b>	Is this product stocked out at the time of visit at the dispensing unit? <b>(INTERVIEWER: Visually verify that usable products are in stock)</b>	Yes	1
		No	2
<b>430.</b>	Reason for stock out	No demand	1

	<b>[Scripter: Only ask Q430 if code 1 is selected at Q429]</b>	Not requested	2
		Not resupplied	3
		Other (specify)	4
		Don't know/not sure	5

Product and unit of count	Dispensing unit where the product could be available (ANSWER RESPONSES ON Q415 appear here)	Is the product stocked out?		Reason for stock out <b>[Insert reasons for each product as drop down menu]</b>
		Yes	1	
		No	2	
<b>427</b>	<b>NOTE</b>	<b>429</b>		<b>430</b>

<b>705.</b>	Facility geographic coordinates (GPS) <b>(INTERVIEWER: Try to have at least 10 meters accuracy)</b>	<b>[Scripter: Allow the system to automatically capture GPS]</b>
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**INTERVIEWER: Thank the persons 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.**

**(INTERVIEWER: Take a picture of the facility's gate/entrance with signage)**

**[Scripter: Allow a picture to be taken here]**