ETHIOPIA

IPLS for HEWs Training Midline Evaluation Report

October to December 2012

THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
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Federal Democratic Republic of Ethiopia
Ministry of Health

JSI

SC4CCM
Supply Chains 4 Community Case Management

Ethiopia

IPLS for HEWs Training
Midline Evaluation Report

October to December 2012

SC4CCM Project

The Improving Supply Chains for Community Case Management of Pneumonia and Other Common Diseases of Childhood Project is funded by the Bill & Melinda Gates Foundation under grant agreement no. OPP1002868, beginning November 2, 2009. The grant is implemented by JSI Research & Training Institute, Inc. The project aims to demonstrate that supply chain constraints at the community level can be overcome, and that doing so may yield significant improvements in the effectiveness, scale, and impact of CCM. SC4CCM will identify, demonstrate, and institutionalize supply chain management (SCM) practices that improve the availability and use of selected essential health products for treating children under five in community-based programs.

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Cover photo: On-the-job training (OJT) during supportive supervision in Amhara Region, Ethiopia

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Acronyms

ACT	artemisinin-based combination therapy
ARI	acute respiratory infection
CCM	community case management
CHW	community health worker
COC	combined oral contraceptives
DMPA	depot-medroxy progesterone acetate
DOV	day of visit
DVW	data validation workshop
EPI	Expanded Program of Immunization
FEFO	first expired, first out
FMOH	Federal Ministry of Health
FP	family planning
HC	health center
HEW	health extension worker
HIV	Human Immunodeficiency Virus
HP	health post
ICCM	Integrated community case management
IFHP	Integrated Family Health Program
IPLS	Integrated Pharmaceutical Logistics System
JSI	John Snow, Inc
LIAT	Logistics Indicator Assessment Tool
NGO	non-governmental organization
OJT	on-the-job training
ORS	oral rehydration salts
PFSA	Pharmaceutical Funding and Supply Agency
PHCU	Primary Health Care Unit
PI	principal investigator
RDT	rapid diagnostic test
RHB	Regional Health Bureau
RUTF	Ready-to-Use Therapeutic Foods
SC4CCM	Supply Chain for Community Case Management
SCM	supply chain management
TB	Tuberculosis
TOC	Theory of Change
TOT	training of trainers
WoHO	Woreda Health Office
ZHD	Zonal Health Department

Operational Definitions

- *Integrated Community Case Management (ICCM)* is a strategy to deliver lifesaving curative interventions for common childhood illnesses by training, supplying and supervising front-line workers (Health Extension Workers in Ethiopia) to treat children for diarrhea, pneumonia and malaria and identify severe acute malnutrition.[1][2]

- *Product availability* is defined as having usable (not damaged or expired) supplies in stock at a facility. Maintaining continuous product availability is the primary objective of supply chain management.

- *Products managed by HEWs* are those products that each HEWs reports they manage on a regular basis at the health post.

- *Storage conditions* reflect the conditions a store should fulfill if it is to maintain the quality and integrity of the health products.

- *Intensive arm* is group training and Zonal/Woreda staff orientations, follow up support to all HCs and select HPs with Woreda and HC staff to support implementation of the trainings, review meetings for HC staff in each woreda to share experiences and discuss ideas to improve coverage rate.

- *Non-intensive arm* is group training and Zonal/Woreda staff orientations, review meetings at woreda level with Woreda and Zonal staff to gauge progress and advocate for improving coverage rate.

- *OJT arm* is on-the-job training approach which entails a TOT for pharmacy storekeepers and HEW supervisors, who then provide OJT to HEWs when they come up to collect products from the HC or during on-site supervision at HP. USAID | DELIVER provides monitoring/supervision as part of ongoing activities.

[1] CORE Group, Save the Children, BASICS and MCHIP, 2010. *Community Case Management Essentials: Treating Common Childhood Illnesses in the Community. A Guide for Program Managers.* Washington D.C.

[2] WHO/UNICEF JOINT STATEMENT, Integrated Community Case Management, (ICCM). June 2012, http://www.unicef.org/health/files/ICCM_Joint_Statement_2012.pdf

Acknowledgments

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We also would like to extend our gratitude to JaRco for recruiting, training and deploying competent data collectors who can use phone for data collection at ease. In addition, the management of the consulting firm and principal investigators (PIs) involved in the data collection and cleaning deserve appreciation for timely responding to our requests.

The participation of Regional Health Bureaus, Zone Health Departments and Woreda Health Offices (WoHOs) in facilitating data collection was appreciated and helped the project to complete the data collection timely. The involvement of PFSA Hubs, RHBs, ZHDs, WoHOs, HCs and HEWs in validation of the data during analysis was of great help.

Last but not least, our heartfelt gratitude goes to those professionals at various levels of the health system who were willing to give us their time to go through our long list of questions.

Executive Summary

Solutions for overcoming supply chain constraints for public health programs are well-documented, but the vast majority of these supply chains, end at facilities and many of the known solutions are primarily relevant for addressing supply issues that plague the central, intermediate, and facility levels. Meanwhile, community-based distribution programs are increasing in number, scale and scope. Yet, the specific supply chain interventions for ICCM that facilitate product availability at the community level are not widely known or documented. In Ethiopia, SC4CCM designed a two-phased intervention strategy to address the ICCM supply chain bottlenecks at the community level identified by the baseline assessment. For Phase I, the priority was to provide an affordable but effective training approach for imparting maximum coverage of supply chain knowledge, skills and tools amongst health extension workers (HEWs), to ensure basic processes and competencies and to contribute to incremental improvements in product availability. Based on this, SC4CCM collaborated with PFSA and the USAID | DELIVER Project to implement the following two training approaches side-by-side: (1) a group-training approach during Primary Health Care Unit (PHCU) monthly meetings, consisting of Integrated Pharmaceutical Logistics System (IPLS) Lessons and Problem Solving modules (intervention arms), and (2) provision of on-the-job training (OJT) during resupply and supportive supervision (comparison arm).

The midline assessment used an adapted Logistics Indicators Assessment Tool (LIAT) [3] as the main tool for gathering quantitative data, a competency questionnaire to measure supply chain competencies among HEWs and focus group discussions with HEWs to assess HEW opinions and get feedback on (i) the process of training, (ii) the problem solving process, and (iii) how training has impacted motivation and feelings of empowerment, and (iv) how HEWs understand their roles.

The results of this midline assessment showed that implementation of the IPLS training for HEWs did not occur as designed across any of the arms as health center staff used different opportunities to train HEWs and tended to train HEWs in groups. Despite variations in training implementation, the results showed that IPLS training for HEWs by the health center (HC) staff was effective in improving HEW competency across all arms, with no significant difference between arms observed. However, completing a bin card and completing the HPMRR were the two exercises of the four implemented that yielded the lowest scores, across all arms, suggesting competency in these areas is harder to achieve. In addition, results showed that training with follow-up support to HCs resulted in better training coverage and supply chain tool availability compared to when little or no follow up was provided.

Given that implementation of IPLS training deviated from the design across the different arms, rather than selecting one training approach, important elements of training were identified across the arms and regions. The assessment results also identified important lessons and guidance on key elements to include in the training curriculum and approach to ensure its success. There was broad consensus that scaling up the modified training approach to other woredas is essential for improving ICCM product availability to health posts.

[3] USAID | DELIVER PROJECT, Task Order 1. 2008. *Logistics Indicators Assessment Tool (LIAT)*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 1.

Introduction

Forty percent of deaths in children under five globally and over 60% of deaths in post-neonatal children, are attributable to three conditions: acute respiratory infections (ARI), malaria, and diarrheal diseases. In sub-Saharan Africa, 53% of deaths in children under five are attributable to these three conditions. Additionally, 43% of children in sub-Saharan Africa suffer from under-nutrition or malnutrition and globally under-nutrition or malnutrition is the underlying causes of more than 30% of under-five deaths. This harsh reality has influenced governments and non-governmental organizations (NGOs) to adopt a variety of approaches to deliver life-saving essential health services for young children, including integrated community case management (ICCM). Although the range of child health interventions offered by community health workers (CHWs) at the lowest level is relatively limited, ensuring a regular supply of the essential medicines and supplies needed to effectively treat sick children is often problematic. And the challenges around product availability are multifold, ranging from a lack of supplies at the community level to lack of data about the supplies at the national level.

Solutions for overcoming supply chain constraints for public health programs are well documented and in many cases have been successful in improving product availability for priority programs such as human immunodeficiency virus (HIV), tuberculosis (TB), family planning (FP), and the Expanded Program of Immunization (EPI). The vast majority of these supply chains, however, end at facilities and many of the known solutions are primarily relevant for addressing supply issues that plague the central, intermediate and facility levels. Meanwhile, community-based distribution programs are increasing in number, scale and scope yet the specific supply chain interventions that facilitate product availability at the community level are not widely known or documented. While general supply chain principles do not change by level, the specifics of how they are applied do vary by level, and it's the specifics that determine how well systems perform. In many cases, when supply chains extend beyond facilities into communities, they are often an add-on to the facility-based model, and may not have a purposeful design or may not incorporate the needs of communities.

The Supply Chain for Community Case Management (SC4CCM) project demonstrates that interventions targeted at improving supply chain performance at the community level can be developed and applied at scale. Identifying and testing a variety of models provides the country and the global community with an understanding of solutions that work, how they work and the environment required to foster their adoption. Being one of the countries with emerging and promising ICCM programs, the SC4CCM project identified Ethiopia as one of the project's priority focus countries in which to learn more about supply chain solutions for the community level.

SC4CCM Theory of Change

The SC4CCM project developed a Theory of Change (TOC) to serve as a technical framework for the project and to guide the process of improving supply chain performance at the community level. The TOC identifies the long-term goal being sought (or main problem that must be addressed) and its relationship to those preconditions that are necessary in order to achieve the goal or solve the problem; it lays out the pathways for making progress for each precondition.

Within the context of the project, the country-level goal that must be achieved is the availability of ICCM products at the health post level when and in the quantities needed in order for health extension workers (HEWs) to treat all sick children who present at their health post with common childhood illnesses. The goal level hypothesis of the project is that if effective and efficient supply chain systems can be created to ensure that HEWs have consistent access to sufficient quantities of high-quality, affordable essential medicines, they will be able to dramatically improve care and treatment for children. This will ultimately contribute, along with other ICCM interventions outside of SC4CCM, to the overall goal of reducing childhood mortality for children under five years of age from treatable diseases.

SC4CCM hypothesized in its TOC that achieving sufficient supplies of essential ICCM products at the health post (HP) level requires all of the following major preconditions to be met:

1. Necessary, usable, quality ICCM products must be available at HP resupply point/s

2. HEWs, or the persons responsible for ICCM resupply, need to know how, where, what, when and how much of each product to resupply and act as needed

3. Goods must be routinely transported between resupply points and HEWs

4. HEWs must have adequate storage: correct conditions, security and adequate space

5. HEWs must be motivated to perform their roles in the ICCM supply chain

SC4CCM’s approach was to identify gaps or obstacles to these preconditions and design and test practical interventions to overcome them as a strategy to significantly improve ICCM product availability at the HP level at scale in low-resource settings.

These preconditions are also dependent on the status and condition of other lower level preconditions that must be met in the first stage if the upper level preconditions are to be achieved. The key implication from this recognition of multi-tier preconditions is that in order to effect meaningful change, the basic building blocks of the system will need to function as expected if the ultimate goal of improving product availability is to be achieved. Hence, the change must address the foundation of the system. The significance of the TOC model is that it forces stakeholders to critically think through those factors that will impact on the program and therefore anticipate data sources that will need to be monitored in order to facilitate assessment of progress and achievements over time towards the desired goal. The ability to achieve the desired long-term project goal and impact directly depends on the existence of necessary preconditions at the different levels they exist.

Appendix A presents a diagrammatic illustration of the Theory of Change Model that underlies the SC4CCM project.

Intervention Strategy

In Ethiopia, SC4CCM designed a two-phased intervention strategy to address the bottlenecks identified by the baseline assessment. For Phase I, the priority was to provide an affordable but effective training approach for imparting maximum coverage of supply chain knowledge, skills and tools amongst HEWs; to ensure basic processes and competencies; and to contribute to incremental improvements in product availability. For Phase II, SC4CCM plans to build on the foundation of supply chain capacity established by Phase I to strengthen the implementation of the IPLS system in order to maximize product availability at the HP level and demonstrate the feasibility of transitioning from a pre-packed kit system to a demand-based system for ICCM products. This report will only discuss the methodology and midline results for Phase I.

During Phase I, SC4CCM collaborated with PFSA and the USAID|DELIVER PROJECT to design a training approach. The objective was to design a supply chain management training for HEWs that was affordable, practical, scalable and effective in providing basic supply chain skills to maximize the number of HEWs trained. Two different approaches were therefore identified that used existing activities as opportunities to impart supply chain knowledge and skills. These two approaches were:

1. A group-training approach during monthly meetings, consisting of IPLS Lessons and Problem Solving modules, and

2. Provision of on-the-job training (OJT) during resupply and supportive supervision

HEWs currently number over 38,000. The Integrated Refresher Training for HEWs lasts 30 days and does not currently include a supply chain management component; therefore, the challenge that the Pharmaceutical Funding and Supply Agency (PFSA), Federal Ministry of Health (FMOH), and partners face is how to provide HEWs with basic supply chain management (SCM) skills without undertaking the significant cost of providing classroom style training to all 38,000+ HEWs. The USAID|DELIVER PROJECT was in the process of implementing an approach where health center (HC) storekeepers provided OJT to HEWs in IPLS. The SC4CCM project decided to explore an alternative approach using group training. A new directive from FMOH forming the Primary Health Care Unit (PHCU) mandated a monthly meeting at HC aimed at affording HEWs with skills, attitudes and supplies. This provided an opportunity to test a group-training approach for imparting supply chain knowledge and skills to HEWs. OJT is generally perceived to be an effective means of reinforcing concepts after an initial training; however, it also can be very effectively as an initial learning method if sufficient resources and time are available. Using the monthly meeting as an opportunity to test group training combined with problem solving meant that extra resources for transportation and per diems were not required and HEWs would receive supply chain training in a continuous manner.

The IPLS Lessons and Problem Solving group training approach uses short, self-contained modules designed to be incorporated into the PHCU meetings as they can be used individually or in combination, and do not require that the participant has completed any previous lessons. Included in these lessons is time for facilitated problem solving to support the HEWs in implementation of the lessons. The problem solving uses a structured approach to identify and prioritize challenges and then works together to find solutions. The problem solving is seen as a means to empower local PHCU teams to identify and address supply chain issues routinely, to ensure solutions can be appropriate to the local context and to maximize agility in the system. The project believes this combined approach can contribute to improved product availability at the HP levels.

The content of the training was the same for both group training and OJT. The HEWs learn about the national logistics system (IPLS) and learn skills in all areas of supply chain management including: how to store supplies properly, distribute and maintain adequate supplies; manage expired and waste products; and record and report accurate information about supplies and their use.

Intervention arms

The districts were split into three intervention arms: intensive, non-intensive and OJT. Implementation of interventions in these arms is described below.

Intensive

A three-day training-of-trainers (TOT) workshop for HC pharmacy/store managers and PHCU directors or HEW Supervisors and a half-day orientation for the head of the woreda and the PHCU director were held. Joint supportive supervision with Woreda Health Office (WoHO) staff was conducted to follow up on implementation of the IPLS lessons and problem solving. This supervision covered all HCs with one to three visits per HC and a few random HPs over a 6-month period. A supportive supervision checklist was introduced to guide supervision and technical support was provided to PHCU directors to introduce regular PHCU meetings and implement the IPLS lessons and problem solving for HEWs within the meetings. Supervision visit updates or feedback was provided to woreda, Zonal Health Districts (ZHD), and Regional Health Bureaus (RHB). One round of review meetings per region was conducted at the end of the 6-month period with participants from PFSA, RHB, ZHD, WoHO, HCs, and HEWs.

Non-intensive

As with the intensive arm of the intervention, a three-day TOT workshop for HC pharmacy/store managers and PHCU directors or HEW Supervisors and a half-day orientation for the woreda and the PHCU director were held. However, the non-intensive arm did not have any follow up or supportive supervision to the HC or HP after the initial training.

On the Job Training (OJT)

As with the intensive and non-intensive arms the HC store managers and HEW supervisors were trained in OJT for three days. Joint supportive supervision was also provided as part of ongoing supervision to HCs and some HPs by USAID|DELIVER PROJECT. In a few woredas, the WoHO took the initiative to conduct supportive supervision to HCs and the HCs to the HPs. HPs who were under SCMS support areas did not receive supervision on the IPLS for HEWs OJT initiative.

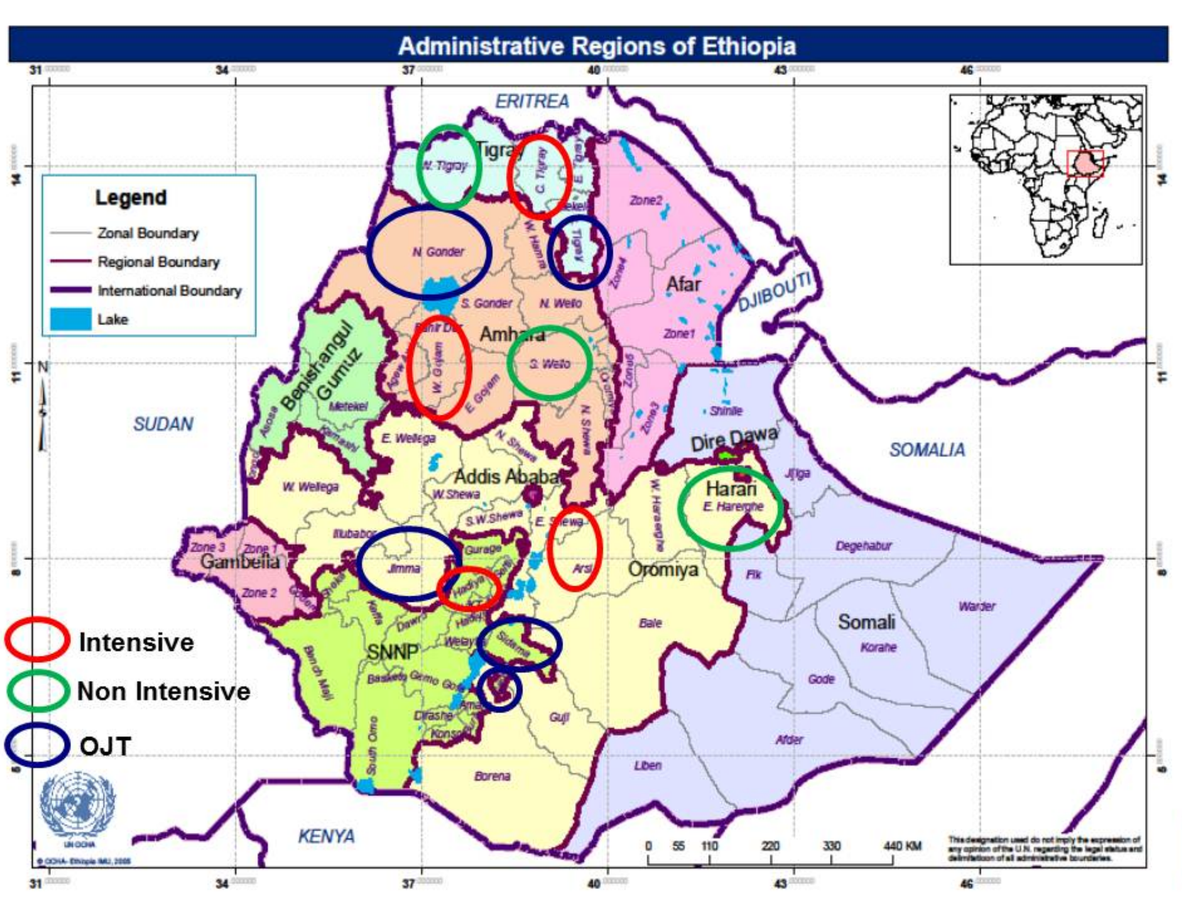
The interventions were rolled out from January to July 2012 (group training was complete by April 2012 and OJT by July 2012) and the midline evaluation was conducted between October and December 2012.

Table I: Comparison of intervention arms

Arm	Training Methodology	Follow Up Support	Roll Out Date	Region and Zone
1. Intensive (I)	Ready Lessons	Follow up support to HCs	January-April 2012	Amhara - West Gojam, Oromia - West Arsi, SNNP – Hadiya, Tigray - Central Tigray

2. Non-intensive (NI)	Ready Lessons	No follow up to HCs	January-April 2012	Amhara - South Wollo, Oromia - East Hararge, SNNP- Gedio, Tigray - North West Tigray
3. On-The Job Training (OJT)	OJT	Regular monitoring and supervision to HCs	June-July 2012	Amahra - North Gondar, Oromia – Jimma, SNNP – Sidama, Tigray – South Tigray

Figure I. Intervention arm locations



Methodology

Objectives

The objective of the midline evaluation was to primarily assess the effect of the group training approach developed by SC4CCM for imparting knowledge and building the capacity of HEWs on the Integrated Pharmaceutical Logistics System (IPLS) aimed at improving supply chain performance at the health post level. The main outcome indicator to be assessed during the midline evaluation is whether:

- Extent of coverage in training HEWs in IPLS
- HEWs have adequate competency in logistics skills related to CCM supply chain.

In addition, the midline evaluation collected data on the following core indicators to monitor progress since the baseline in 2010:

- HEWs have usable and quality medicines (e.g., cotrimoxazole, ACTs, ORS, zinc, and RUTF) available when needed for appropriate treatment of common childhood diseases.
- Necessary, usable, quality CCM products are available at HEW resupply point/s
- HEWs have adequate storage: correct conditions, security and adequate space
- All persons involved with the CCM portion of the supply chain are motivated to perform their roles in the supply chain
- Means exist to transport essential products to HEW's from supply points

Local evaluation partner

To improve efficiency and build local ownership and capacity, SC4CCM selected JaRco through a competitive process as an evaluation partner in Ethiopia to oversee all aspects of data collection. JaRco also conducted the baseline survey in 2010.

Data Collection Tools

Both qualitative and quantitative methods were used to collect data. Like the baseline, the midline used the Logistics Indicators Assessment Tool (LIAT) as the main tool for gathering quantitative data. The LIAT is a proven tool for assessing stock status and other quantifiable performance metrics of a supply chain.[4] It was modified both to focus on community level supply chain issues and for the Ethiopian context. Survey questionnaires were formatted for and loaded on to smart phones for greater ease and efficiency of data collection. The LIAT collected data to measure core indicators through structured interviews with HEWs and with HC and/or warehouse staff at all levels of the system. Data collection included physically counting the quantity of key ICCM products kept at each level of the system (including stock kept by the HEWs), observation of storage conditions and certain aspects of record keeping and reporting.

[4] USAID | DELIVER PROJECT, Task Order 1. 2008. *Logistics Indicators Assessment Tool (LIAT)*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order http://deliver.jsi.com/dlvr_content/resources/allpubs/guidelines/CondSCAsseLSATLIAT.pdf

In addition to the LIAT, a competency questionnaire was administered to measure supply chain competencies among HEWs. HEWs were presented with mock situations and completed tests on starting a bin card for a new product, completing a bin card, completing the HPMRR form and storing health products.

For qualitative data, focus group discussions were conducted with HEWs to assess HEW opinions and get feedback on (i) the process of training, (ii) the problem solving process, to better understand how it has helped them with their work (in the OJT arm, understand how they have dealt with or solved problems otherwise), (iii) how training has impacted motivation, feelings of empowerment, and how HEWs understand their roles. Various meetings were conducted between JaRco and JSI before the data collection was started to discuss some basic pre-survey issues, including the FGD protocols and the determination of sample size. The FGD tool was developed based on the framework provided by JSI and the draft tool was shared with the wider group for comments, which were received and incorporated.

Sampling

LIAT

The regions, zones, and woredas included in the midline assessment were the same as those sampled for baseline. The midline survey was conducted in the West Gojam and South Wollo zones of Amhara regional state, the East Hararghe, West Arsi and Jima zones of Oromiya regional state, the Hadiya, Gedeo and Sidama zones of Southern National and Nationality People (SNNP) regional state and the Northwest, Central and South areas of Tigray regional state.

The woredas were sampled using the probability proportional to size sampling approach with size based on the number of functioning HPs for a total of 28 woreda health offices. Three HCs were chosen randomly per woreda. However, in woredas where there were only one or two HCs, all were selected. A total of 82 HCs were included. The HP/HEW sampling target was nine HPs per woreda selected randomly. In most cases this means three HPs per HC were selected randomly. If there were fewer than 3 HCs in a selected woreda, the 9 HPs were selected from the catchment areas. If HPs were supervised and supplied directly from the woreda, then 9 HPs were randomly selected directly from the woreda level. Once the HPs were selected, if there was more than one HEW at the HP, one of them was chosen randomly. If there was only one HEW at the post, that person was interviewed. The target sample size for HPs/HEWs was 252 HPs/HEWs, but the actual sample to be visited was 265 HPs, representing a 5% oversample in case HPs were not found or not functional or HEWs were not available.

Tables II to IV show the samples included in the results for Phase I.

Table II. Phase I samples at all levels

	Intensive	Non-Intensive	OJT	Total
RHB	Amhara, Oromiya, SNNP, Tigray	Amhara, Oromiya, SNNP, Tigray	Amhara, Oromiya, SNNP, Tigray	4
ZHO	W. Gojam, W. Arsi, Hadiya, C. Tigray	S. Wollo, E. Hararge, Gedio, NW Tigray	N. Gondar, Jimma, Sidama, S. Tigray	12
WHO	8	10	10	28
HC	24	30	28	82
Health Posts	80	92	91	263

Table III. LIAT sampling by intervention arm

	HEW Sample		HC Sample	
	BL (n=244)	ML (n=252)	BL (n=74)	ML (n=82)
OJT (C)	30%	36%	35%	34%
Non Intensive (NI)	28%	33%	27%	37%
Intensive (I)	42%	31%	38%	29%

Table IV. Sample sizes for each questionnaire by arm

	Intensive	Non-Intensive	OJT	Total
No. of HEWs who completed the following:				
HEW Interview	79	82	91	252
Stock status	80	89	92	261
Competency	63	92	80	235
No. of HC Pharmacy Managers (PM) who completed the following:				
HC PM Interview	28	30	24	82
Stock status	27	30	24	81

Focus group discussions (FGD)

The qualitative survey was conducted in nine zones; Jima, West Arsi and East Hararghe zone of Oromiya regional state; South Wollo, West Gojam and North Gondar zones of Amhara regional state; and Gedeo, Sidama and Hadiya zone of SNNP. The 9 FGDs were conducted in nine woredas and 108 HEWs participated in the FGDs from about 36 cluster HCs and 108 HPs (Table V).

Table V. Focus group sampling by intervention arm

Region	Zone	Woreda	Intensive	Non-intensive	OJT
Oromiya	East Hararghe	Goro Gutu		X	
	West Arsi	Dodola	X		
	Jimma	Shebe			X
Amhara	South Wollo	Kallu		X	
	North Gondar	West Belesa			X
	West Gojam	Yilmana Densa	X		
SNNP	Hadiya	Sorro	X		
	Gedeo	Bulle		X	
	Sidama	Aleta Wondo			X
Total	9	9	3	3	3

The different sample sizes observed in Table V were due to various issues in data collection. Questionnaires were supposed to be done by the same HP in one day, but on some occasions data was not collected on the same day (due to the HEW being busy, delays in data collection, therefore not being able to complete all the forms in one day) and different HEWs (from the same HP) administered the different questionnaires.

Data collectors' recruitment and training

A total of 27 individuals (18 data collectors, 9 supervisors and 1 Principal Investigator (PI)) were trained over a period of nine days. The first four days of training were devoted to classroom learning on the background of the project, training on the quantitative data collection tools, sampling, and data collection, data entry and storage using smart phones. The fifth, sixth and seventh days were used to pre-test tools in the field, and the afternoons of the sixth and seventh days were used to process feedback on pre-test experiences. The remaining days were used to revise questionnaires (based on the pre-test), finalize the translation of the questionnaires into local languages and upload the final version of questionnaires onto the phones. In addition, key aspects of the survey process were reviewed with the supervisors, including field logistics, sampling guidelines, and overall supervision. Also, a half data training was conducted with the qualitative data collectors on the FGDs, including a discussion on the FGD tool, sampling, data collection and data analysis.

The data collectors were divided into 9 teams, each with two data collectors and one supervisor. Each SC4CCM team member was assigned to travel to one of the four-target regions-Amhara, Oromiya, SNNP, and Tigray- to help supervise data collection.

Data collection

LIAT

Data collectors used 18 mobile smart phones loaded with preset forms to collect the quantitative survey data, and then respective supervisors sent the data to JaRco's data manager after checking data completeness. The forms were developed using a web-based program called Magpi (which was called EpiSurveyor during the time of baseline). Forms for each level of the systems were finalized by JSI, adapted from the paper-based LIAT and uploaded to the mobile phone for the data collections. Data collectors, supervisors, and PIs were trained in mobile phone operation and synchronizing and sending data to JaRco's central office so data records could be uploaded into the database in a scheduled manner. In addition, the data collectors and supervisors were given printed local language (Amharic, Oromia and Tigergna) versions of all questionnaires for administering the LIAT at all levels in a uniform way.

Focus Group Discussions

Upon completion of the tool the survey teams were deployed to their respective sites with the first team deployed on the 28th of November 2012 and the second team deployed on the 1st of December, 2012. The JSI regional coordinators were present in the field and facilitated the FGD. The qualitative survey was completed on the 13th of December for the first team and 10th of December 2012 for the second team.

Data Quality Check for data from LIAT

Data collection and inventory were done according to the steps below:

1. After completion of data collection, the data was initially stored on the mobile telephone used by the enumerator. The data entries were then checked for completeness and accuracy by the supervisor, such that any errors discovered by the supervisor were corrected before re-saving and uploading data to the computer.

2. At the end of each day, the supervisors uploaded the data from the phones of the enumerators to their laptops and sent the data via email to the data manager of JaRco.

3. The data manager at the head office of JaRco cleaned the data in MS Excel and sent the cleaned dataset to the SC4CCM Data Manager, who was based in Addis, at the end of every week of data collection. The SC4CCM data manager uploaded the records in batches to Magpi (EpiSurveyor) for access by SC4CCM M&E staff at JSI-Washington Office.

4. The JSI team checked and verified the data and contacted JaRco for any queries.

Data Analysis

Data was first formatted in Excel to prepare for transfer into statistical analysis software. Data was then analyzed using STATA 11. To assess competency scores, Kruskal-Wallis testing was used to compare means for non-normal distributions. Chi-squared tests were used to assess other differences between intervention groups. A difference in difference model was developed to assess the impact of the intervention on key outcomes.

The qualitative data collected from the field was organized in two ways; the first sets of reports were in expanded field note form and the second set of reports were in the form of a semi-synthesized field report by major thematic areas.

Limitations

The following limitations were experienced during the midline assessment:

- Predictable challenges associated with multi-lingual survey: all surveys were translated in to three languages—Amharic, Oromia, and Tigrinya

- Some health posts/centers were not accessible; replacements were made when possible

- Missing/incomplete data for some forms

- Majority of HC staff in OJT arm were not trained at the time of the midline, thereby limiting sample size and possibilities for comparison. It is important to note that we did not include the results from the OJT arm since roll out of training in the OJT arm was not fully done at the time of the midline evaluation and therefore comparisons between arms were limited to the intensive and non-intensive arms

- Smaller samples at the time of the midline in Tigray given the later roll out of TOTs in the region

- Minimal differences in training implementation across the three arms

Results

Relevant context

Relevant elements of the interventions need to be in place prior to assessing HEW competency. These elements are described below in the entire sample as well as by intervention arm.

Health Center was the primary point of resupply

According to the IPLS design, the resupply points for HPs are the HCs. At midline 95% of HPs were resupplied primarily from HCs compared to only 66% of HPs at baseline. At midline, only 13% of HPs also received products from the WoHO, whereas at baseline, 44% of HPs reported the WoHO as a resupply point.

HEWs have basic supply chain management knowledge and skills

For a more efficient supply chain system, HEWs must have basic supply chain management knowledge and skills. At baseline only 8% of the HC supervisor staff and 11% of HEWs reported being trained on supply chain management. At midline, there was an increase with 70% of HC staff and 54% of HEWs reporting that they were formally trained in IPLS.

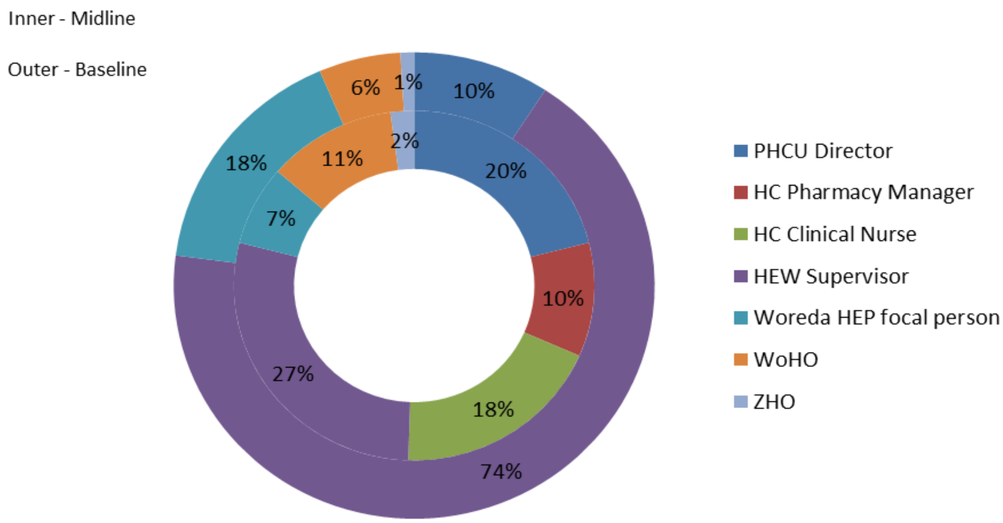
PHCU meetings occurred every month

For training to occur in monthly PHCU meetings, the meetings have to be held every month as planned. A new PHCU Directive was introduced in 2012 that aims to strengthen the linkage between HCs and HPs. The PHCU directives manual includes the necessity of conducting monthly PHCU meetings (PHCU Director, HC staff, HEWs Supervisors and HEWs) that focus on skills, knowledge and supplies. While the policy and manual have been available, communicating and implementing this policy at the lower levels has been slower than expected. In our survey only 56% of the HC staff reported that the PHCU meetings were held every month: 79% from the intensive arm, 43% from the non-intensive arm and 50% from the OJT arm.

HEWs were supervised

Supervision is an important part of the public health system support for HEWs. At midline, a change in supervision structure was observed. A majority of HEWs reported HEW supervisors as their primary source of supervision followed by woreda HEW focal persons at baseline; however, at midline HEWs reported receiving supervision mainly from HEW supervisors, the PHCU director and the HC clinical nurse (Figure II).

Figure II. Supervision structure, Baseline vs. Midline*



*PHCU directors and pharmacy managers were categories not included in the baseline questionnaire

Training by Arm

Intensive arm

By the time the midline evaluation was conducted, 62% of HC pharmacy managers reported receiving the SC4CCM IPLS for HEWs (TOT) training, and 84% of HEWs reported receiving IPLS training. Of these HEWs, 76% reported receiving their most recent IPLS training during the monthly HC meeting; however, a majority of HEWs reported that this training occurred 3-12 months ago.

Training was not always implemented at the PHCU monthly meetings as designed; variation in delivery settings and methods was observed. When HEWs were asked where they learned how to complete forms, less than half of the HEWs (49%) reported during a monthly meeting, whereas other HEWs reported during a workshop (42%) or from a supervisor or during OJT (36%). Information from focus group discussions also demonstrated varied approaches in how group training was conducted. In Amhara, the IPLS trainings were provided either at one of the cluster HCs for two full days or two hours in conjunction with each monthly review meeting. In SNNPR, the trainings were given at the woreda level or at each cluster HC for one day each month. In Oromiya, most HEWs were trained in the cluster HC. A few HEWs were trained in the WoHO or at the HP.

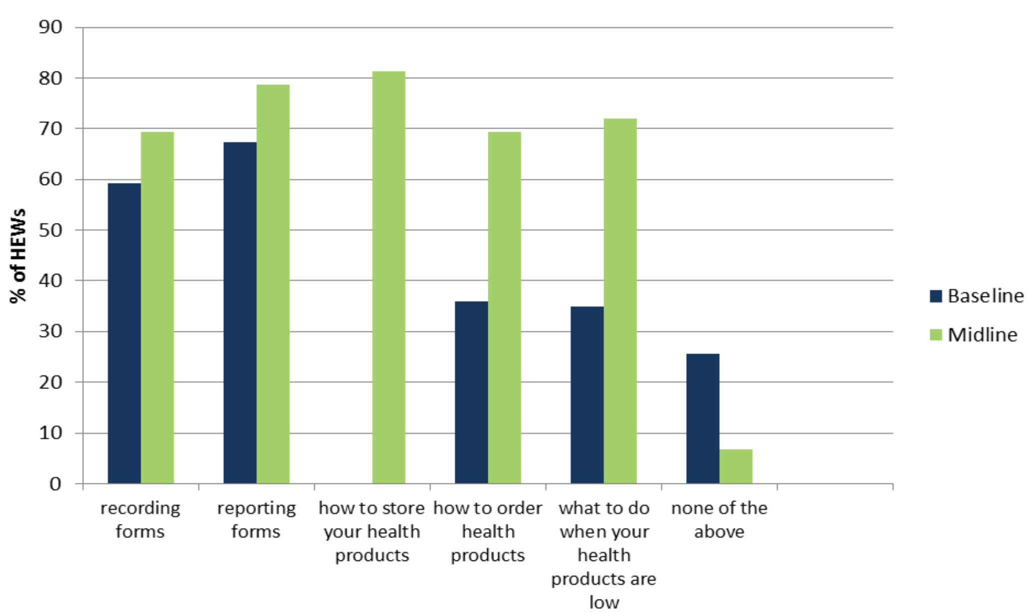
Among the HEWs from the intensive arm who were trained in IPLS, a majority had the supply chain tools that they need. 72% had a flipbook and 95% had a blank HPMRR available. For bin card availability, it varied by product, but generally half or more of the HEWs who managed a product had a bin card for each item (Table VI).

Table VI. Percentage of HEWs who have a bin card for the following products

	Non-intensive	Intensive
Cotrimoxazole 120mg	38.1	80.5
Cotrimoxazole 240mg	0	20
Amoxicillin 250mg	36.4	70.6
Amoxicillin 125mg	38.7	93.9
Coartem 1x6 tablets	13.2	17.1
Coartem 2x6	11.1	20
Chloroquine 50mg	27.8	55.2
RDT	26.5	63.8
Zinc 20mg	60	78.6
ORS	31.8	69.7
RUTF	38.4	47.2
Male condoms	33.3	59.5
Depo Provera	47.2	88.8
Combined oral contraceptives	39.1	67.5

Among the 95% who reported receiving supervision, HEWs were asked which topics were discussed during supervision. Overall, a higher percentage of HEWs in the intensive arm at midline compared to baseline reported receiving supervision in relevant supply chain management topics: recording forms, reporting forms, how to store health products, how to order health products, and what to do when health products are low (Figure III).

Figure III. Topics discussed during supervision, intensive arm*



*"How to store your health products" was not asked at baseline

In general, HEWs were satisfied with the IPLS training. HEWs described the training as "organized" and "practical", with enough tools that allowed for hands-on practice; however, there were issues with the time allocated for training not being enough. One HEW reported that the training was conducted for one day to cover three days' worth of material.

Non-intensive arm

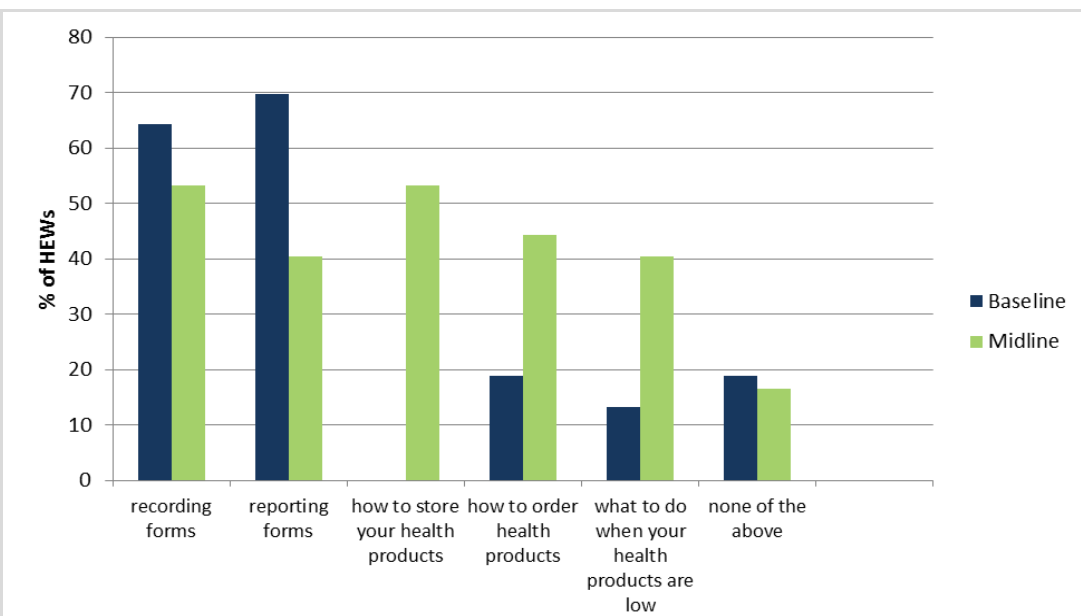
At midline, 70% of HC pharmacy managers reported receiving SC4CCM IPLS for HEWs (TOT) training, and 62% of HEWs reported receiving IPLS training. 43% of HEWs who received IPLS training reported that the most recent IPLS training they received was during the monthly HC meeting as designed. Like the intensive arm, most HEWs reported receiving their most recent training 3 to 12 months prior, with a decrease in momentum after initial training: 14% received training 1 to 3 months ago and 10% less than 30 days ago.

Training in the non-intensive arm was also not always implemented as planned, with 48% of HEWs reporting that they learned how to complete forms during a monthly meeting, 19% during a workshop and 39% from their supervisor or during OJT. The method HEWs were trained was also inconsistent. In Amhara, IPLS orientation was provided after the monthly PHCU meeting. In SNNPR, IPLS training was provided in two ways: 1) an orientation at the woreda level as part of another meeting lasting less than 30 minutes which most of the HEWs attended, or 2) at the cluster HCs which lasted for half a day. The latter was only given to a select number of HPs. In Oromiya, the training was appended to the end of an existing training.

The availability of supply chain management tools in the non-intensive arm was slightly lower than in the intensive arm with 61% having a flipbook and 70% having a blank HPMRR available (difference between arms significant for percent having blank HPMRR). Like the intensive arm, bin card availability varied by product, although it was lower in the non-intensive arm in general with only one third of HEWs who manage a product having a bin card for the item (Table VI).

Ninety-seven percent of HEWs in the non-intensive arm reported receiving supervision. Unlike the intensive arm where midline estimates were higher in all supervision topics compared to baseline, fewer HEWs at midline reported recording and reporting forms as supervision topics in the non-intensive arm.

Figure IV. Topics discussed during supervision, non-intensive arm*



*"how to store your health products" was not asked at baseline

Similar to the intensive group, HEWs in general liked the group training lessons developed as part of the intervention and conducted by the HC staff. HEWs were partial to the "interactive nature" of the training and the practical information provided by the trainings. One HEW stressed the usefulness of the tools and materials, which can be used when working. HEWs also echoed that the time given for the training was inadequate. Another HEW reported that the training sounded more like an announcement because it was held as part of an existing meeting and a separately arranged time was not allocated for it.

On-the-job Training arm

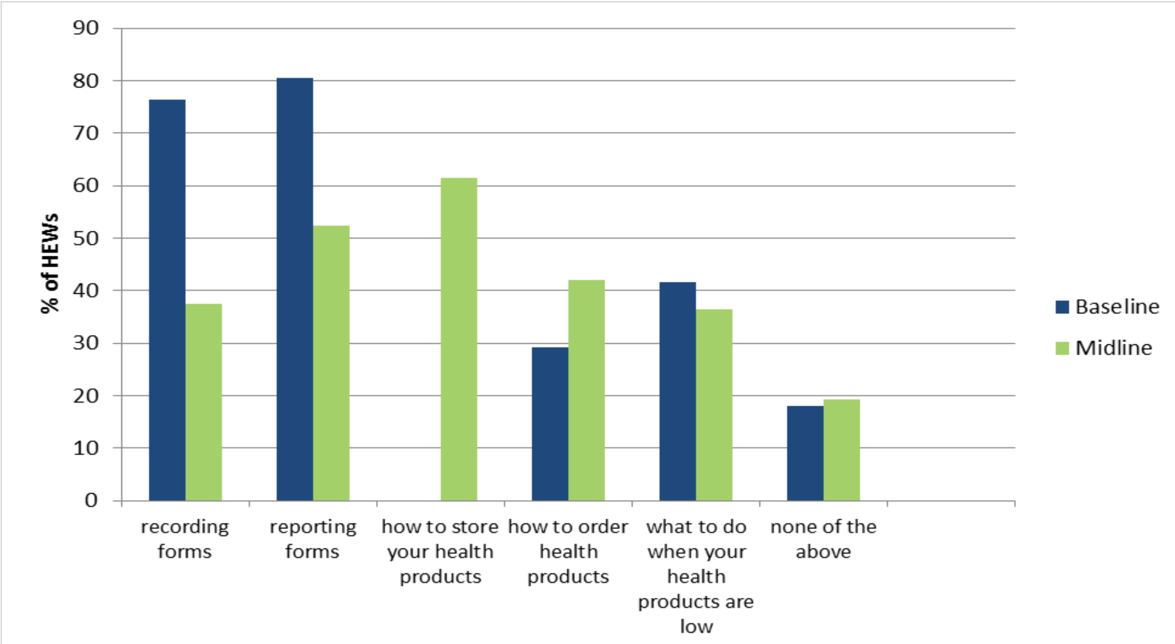
One-fourth of the HC pharmacy managers reported receiving SC4CCM IPLS for HEWs (TOT) training, and only 15 of 91 HEWs (17%) in the OJT arm reported receiving IPLS training. Seven of the 15 trained HEWs reported receiving their most recent training during the monthly HC meeting. And like the two intervention arms, most HEWs were trained 3 to 12 months prior to the survey; however, training increased in the 30 days prior to the midline evaluation. There was also variation in the delivery setting and methods as reported by HEWs in the OJT group. When asked where they learned how to complete forms, three HEWs reported during a monthly meeting, three during a workshop, and four from a supervisor or during OJT.

The focus group discussions showed that of the smaller percentage of HEWs who had received training in the OJT arm, training was delivered differently across regions. In Amhara, the IPLS orientation was provided to all HEWs from 30 different kebeles in the woreda. The training was followed by OJT conducted monthly at each cluster HC. In Oromiya, three of the 12 HEWs interviewed reported that they received a 30-45 minute orientation session rather than a full training at the end of another meeting. They were also trained as a group instead of being trained individually. In SNNPR, only one HEW in the sample had been trained, possibly due to roll out only having just begun in the region at the time of data collection.

IPLS tool availability was quite low in the OJT group, only 6 HEWs had a flipbook and 7 had a blank HPMRR available out of the 15 who were trained in IPLS.

Out of the 91 HEWs trained across arms, 97% reported that they received supervision. According to these HEWs, over half discussed reporting forms (61%) and how to store health products (52%). A higher percentage of HEWs at baseline reported that recording and reporting forms as well as what to do when health products are low were discussed during supervision compared to midline (Figure V).

Figure V. Topics discussed during supervision, OJT arm*



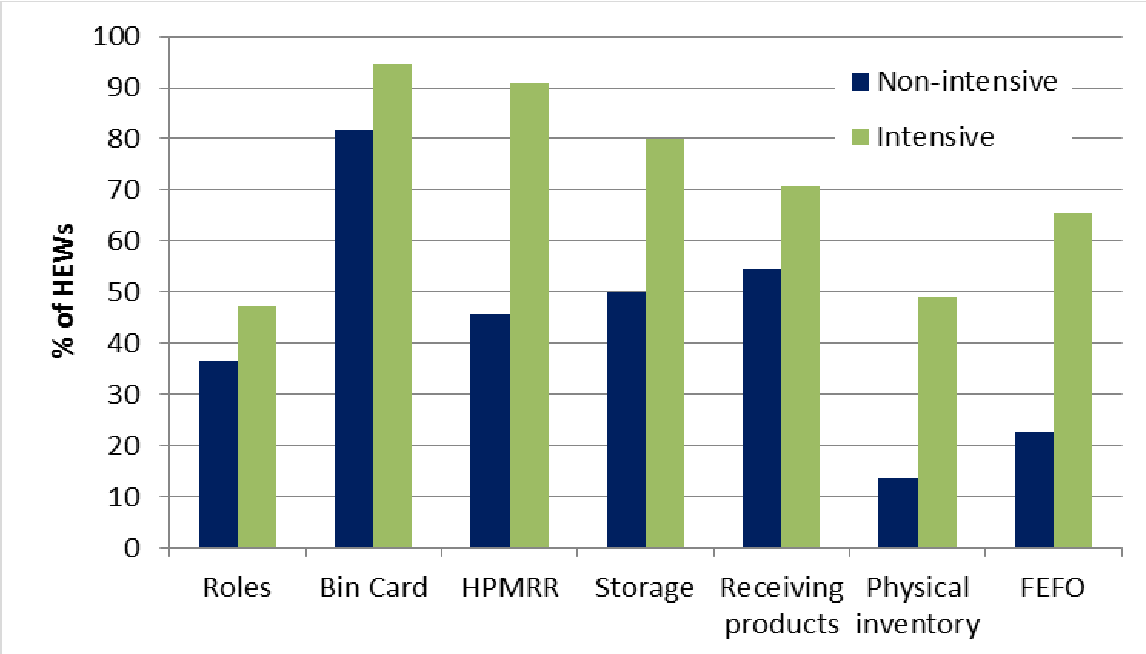
*"How to store your health products" was not asked at baseline

The training methodology was generally accepted by the HEWs in this group. HEWs liked the content and subject matter of the training, which gave them applicable and new knowledge and skills. However, some reported that the training was not interactive due to the short period of time in which it was given. One HEW reported that the training was not well organized. The process felt rushed, so the HEW did not understand the content.

Problem solving

Problem solving sessions are a component of the interventions carried out in the intensive and non-intensive arms; however, few HEWs reported attending these sessions. Forty-seven percent of HEWs in both intervention arms reported participating in a problem solving session during monthly meetings with the majority of those from the intensive arm. Over half of these HEWs (68%) were from the intensive arm and in the non-intensive arm, only a quarter (26%) of HEWs reported participating in a problem solving session during monthly meetings. During these problem-solving sessions, bin cards were the most common topic discussed according to HEWs from the intensive group; in the non-intensive group, bin card and HPMRR were the most common topics discussed (Figure VI).

Figure VI. Topics discussed during problem solving sessions as reported by HEWs



As the evaluation was conducted only 6 months after implementation of this part of the intervention, there was likely insufficient time for this component to reach its potential at the time of the midline. The problem solving sessions supplement the learning from the ready lessons. At the HC level, only half (52%) of HC pharmacy managers reported conducting IPLS problem solving sessions with HEWs. In addition, only 14 HC pharmacy managers reported using problem solving tracking tools, the majority (n=8) of which were from the intensive arm. Using these tracking tools, most HC pharmacy managers (46%) were able to identify 3 to 4 problems which were identified through the problem solving sessions. The tracking tool in the intensive group was 100% complete (n=8).

Table VII. Topics discussed during problem solving sessions as reported by HC pharmacy managers

	OJT (n)	Non-intensive (n)	Intensive (n)
Problems with drug availability	2	3	4
Lack of support	0	2	3
Lack of transport	1	2	5
Lack of bin cards	0	1	5
Challenges with HPMMR forms	0	1	5
Challenges in storing supplies	0	1	5
Challenges in conducting a physical count	0	0	2

Because problem solving sessions have not been fully implemented, problem solving was not identified as being uniformly helpful in addressing problems. HC pharmacy managers reported that several different challenges were discussed during these sessions with drug availability being the most common (Table VII). In addition, storage conditions were a common topic during these sessions and data from the focus group discussions showed that many HEWs raised storage issues such as lack of shelving. For example, one HEW reported that even after making wooden shelves, she argued that HEWs still need lockable cabinets to keep products from rodents or mice. Another reported that requests were made to the WoHO for shelves; instead, they were advised to use whatever they could find to store their products and documents. However, only in a few cases did HEWs reference solutions that had been provided by their supervisors.

Few solutions were also identified for transportation challenges. Instead HEWs were consistently reminded that it was their individual responsibility to transport medicines from the cluster HC to their HPs. The few solutions provided varied and were not always helpful due to the problem solving component not being implemented fully. In Amhara, some HEWs reported that their kebele and community leaders were helpful in solving some of their problems. In particular, they were able to help in obtaining some unavailable medicines and assisting with transport of vaccines and medications. In Amhara, a HEW reported that during a problem solving session there was discussion on how to build a shelf to store medicines from local wooden material. On the other hand, in Oromiya, some HEWs borrowed mules from the kebele head, who sometimes requested payment for their use.

Despite slow rollout of the problem solving sessions, when HEWs were asked about the usefulness of problem solving sessions, HEWs from all regions stressed that the problem solving was very important for strengthening IPLS at HEW level.

Competency skills

Competency scores were first analyzed weighting for sample sizes in each arm. Based on these results, when HEWs were administered the competency exercise, they scored above 60% in all areas, except for the exercise that tested completion of HPMRR (Table VIII). The intensive arm showed a higher score when asked about product storage compared to the other arms; however, this difference was not significant. No significant differences were observed between arms across the four competency topics (Table VIII). Scores were then analyzed looking at the percentage of HEWs who scored correctly in all of the most important items in the exercises. However, still no significant difference between arms was observed and an even lower percentage, approximately 30%, of HEWs was able to complete a bin card and HPMRR (Table VIII). The results showed that there is room for improvement in all competency areas, especially in completing the HPMRR and a bin card.

Table VIII. Results from analysis of competency scores

	OJT (n=12*)	Non-intensive (n=58)	Intensive (n=68)	p-value (comparison across 3 arms)
Overall % correct average weighted by sample size				
Starting a BC	81.7	85.6	85.7	0.61
Completing a BC	66.3	62.9	69.9	0.37
Completing HPMRR	37.1	46.1	53.4	0.18
Storing Products	61.7	63.2	73.5	0.29
% of HEWs who got ‘highest weighted answers ‘ all correct				
Starting a BC	33.3	55.2	60.3	0.22
Completing a BC	25	19	32.8	0.61
Completing HPMRR	33.3	29.3	32.4	0.17
Storing products**	50	48.3	61.8	0.30

*n too small for statistical comparison **All items were included

Application of training for key competency areas

HEWs were given a competency questionnaire to assess their knowledge and skills on starting a bin card for a new product, completing a bin card, completing the HPMRR form and storing health products. This section discusses the application of the training components in these IPLS areas tested.

IPLS lessons were composed of five topics: Introduction to IPLS for HEWs, Completing the Bin Card, Monthly HPMRR, Receiving and Conducting Physical Count and Proper Storage of Pharmaceuticals. Forty-five percent of HC pharmacy managers reported providing all five IPLS topics over the 6 month period between the start of training and the midline evaluation. Only a quarter of HEWs reported receiving training on all five topics. Majority of HEWs reported being trained on bin cards (92%), storage (80%) and HPMRR (77%). The first IPLS lesson (Roles) was the topic that was least covered in trainings.

After the trainings, a majority of HEWs cited changing practices with bin cards and storage. Examples from focus group discussions are in Box I. These results were also supported by survey data. **Looking at the use of bin cards, HEWs began using bin cards for most products after the trainings, compared to baseline where no HEWs had been cards in any arm for any product**. The intensive group had the highest availability of bin cards for all products (Table IX).

Box I. Focus Group Discussion: What did HEWs do differently after the trainings?

"After taking the training, I was able to rearrange the medicines on a shelf with labels and BIN cards on them. It is easy for anybody to tell which medicines are available or not." (Kallu, NI)

"We were able to do physical inventory as a result of taking IPLS training. We did not know why and how inventory is done before." (Yilma Densa, I)

"After the training I separated all products I had in my store based on their category. I arranged them based on FEFO and undertook physical inventory for each product and I also opened BIN card for each product after the physical inventory was done. We didn't do things this way before. We used to only learn about stock out of a product when we couldn't find it to give it to the patient. Another example, we started requesting for products that are already limited in quantity before it is stock out." (Sorro, I)

"We opened a BIN card after the training. We also rearranged products based the type of the medicine and their expiry date." (Bulle, NI)

"We opened a BIN card after the training. We also rearranged products based the type of the medicine and their expiry date." (Bulle, NI)

Table IX. HEWs who maintain bin cards across all products

	Non-intensive (%)	Intensive (%)
Cotrimoxazole 120mg	38	81
Amoxicillin 250mg	36	71
Coartem 1x6 tablets	13	17
Coartem 2x6	11	20
RDT	27	64
Zinc 20mg	60	79

	Non-intensive (%)	Intensive (%)
ORS	32	70
RUTF	38	47
Male condoms	33	60
Depo Provera	47	89
Combined oral contraceptives	39	68

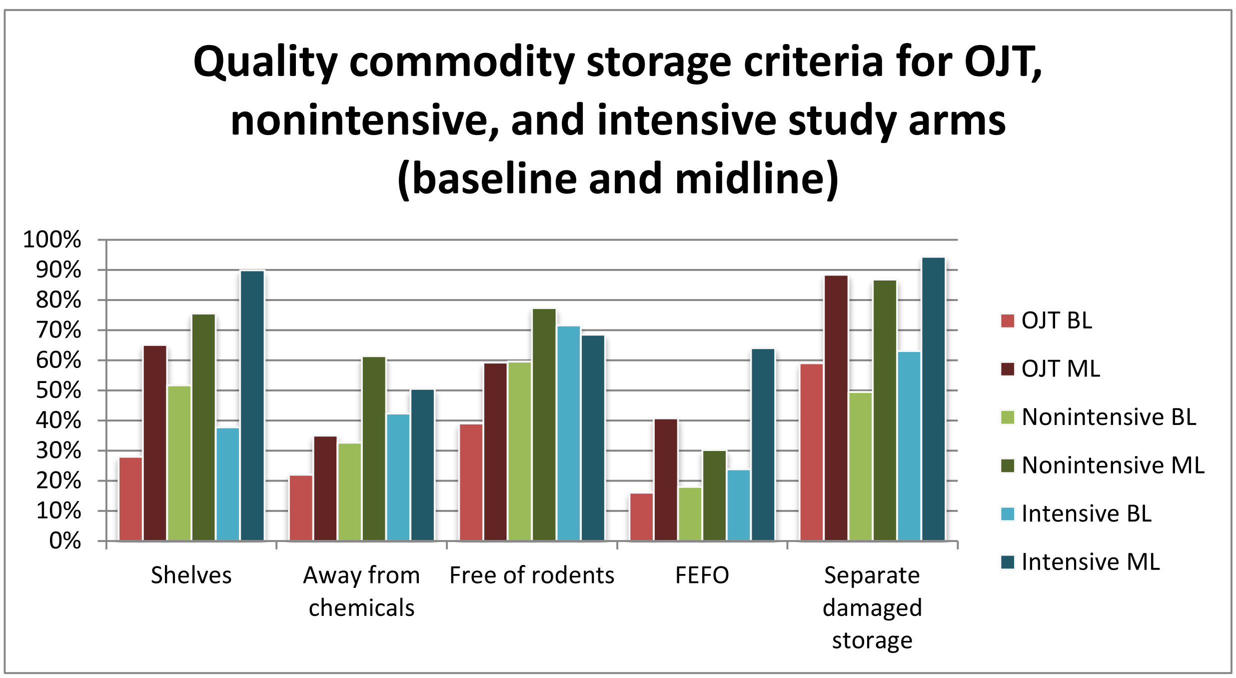
Adequate storage was assessed based on the conditions listed in Box II. At midline, improvements in all conditions across all groups were observed compared to baseline; however, rodents were still an issue at midline (Figure VII). There were also improvements in shelving, with conditions increasing across all three arms at midline compared to baseline.

Box II. Adequate storage conditions

Definition of adequate storage conditions

- Health products are stored on shelves or stacked off the floor away from walls
- Health products are stored separately from insecticides and chemicals
- The storeroom or storage area is free of rodents or insects.
- Health products are stored and organized according to first-to-expire, first-out (FEFO)
- Damaged and/or expired health products are stored separately from usable ones.

Figure VII. Adequate storage conditions at the health post level, baseline vs. midline



Improvements after trainings were also observed in the use of HPMRR for reporting. At baseline, 89% of HEWs reported that they complete reports regularly and submit to the higher level; however, there was no standard logistics report that the HEWs submitted. Instead HEWs mentioned 6-7 different reports including a logistics report, medical product request form, monthly request forms, quarterly drug reports, bi-monthly reports, and activity reports. They submitted these regularly with no single report having more than 30% of HEWs using them. **At midline, the use of a standard logistics reporting form greatly improved after training across both intensive and non-intensive intervention arms**. Table X shows that majority of trained HEWs from both intervention arms reported using HPMRR forms to send to resupply HCs and to submit every month to the higher level. Most HC pharmacy managers reported that HPs were supposed to bring up HPMRR reports to the HC. The use of HPMRR was higher in the intensive group compared to the non-intensive group.

Table X. Use of standard logistics reporting form

	Intensive	Non-intensive
IPLS trained HEWs who report that HPMRR forms supposed to be sent to resupply health centers	98%	82%
IPLS trained HEWs who report that HPMRR forms should be submitted every month to the higher level	97%	73%
HC PM trained in IPLS who report HPs bring up reports to the right place	89%	75%

Additional data from focus group discussions looked at the motivation levels of HEWs for supply chain tasks. In Amhara and Oromiya, HEWs stated that practicing good supply chain management, availability of medicines, and access to useful tools were sources of satisfaction. They also expressed increased motivation as a result of the IPLS training, and having the knowledge and skills they needed to perform their jobs well. The HEWs found the IPLS guide particularly to be very helpful as a reference for the training. One observer noted:

> *"All the respondents agreed that the training motivated them to perform their supply chain work more effectively, because the training give them new knowledge which was not there before, it enabled them to provide better service for their clients, it enable them to manage stock properly and it made their stock management easier." (Dodola, I)*

In addition, the HEWs said that their motivation was enhanced when the results of the training were visible to the community, e.g. when the community could see well-arranged products at the health post.

Product Availability

This intervention was not hypothesized to directly impact product availability as there are other important factors affecting this outcome, as hypothesized in our TOC, that were not addressed by this intervention. However, the team did collect product availability information in all three arms and the discussions about this data during the data validation workshops (DVWs) helped contextualize these results and inform activities for the next phase of the project.

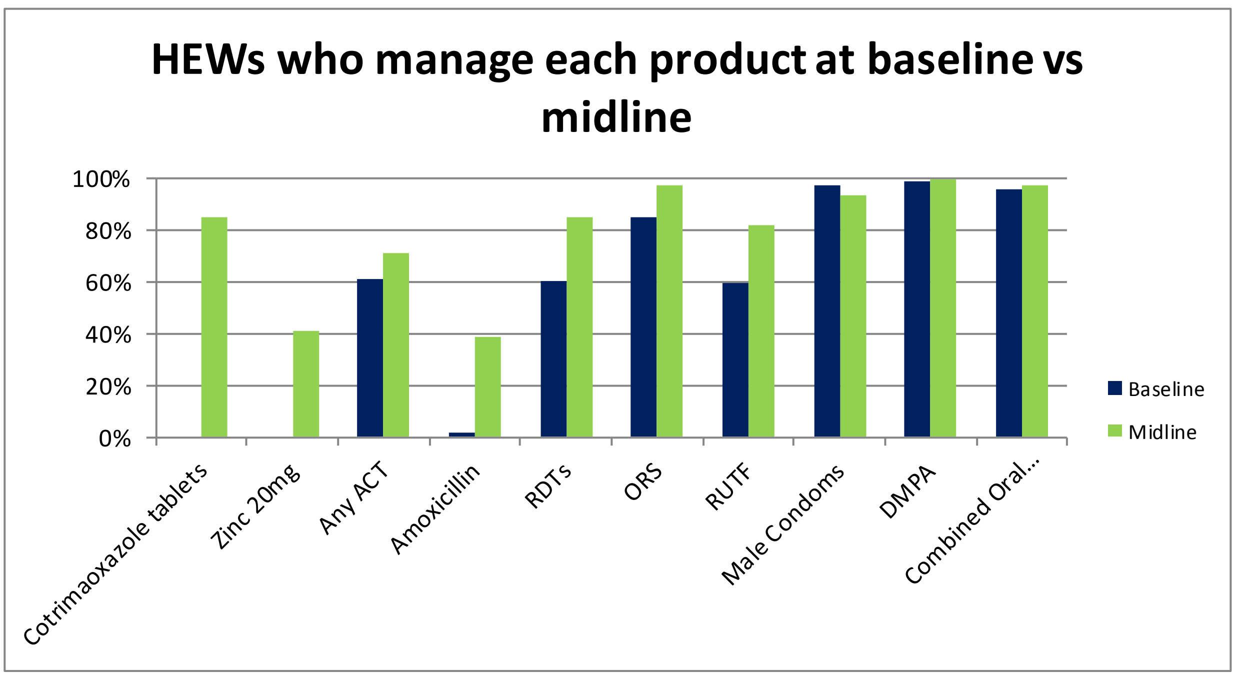
A list of ten tracer products (Box III) was identified from the full list of products managed by HEWs by FMOH and ICCM partners for the midline survey. The products included all key products for treating the common childhood illnesses, malaria, pneumonia, diarrhea, malnutrition, and some representative family planning products.

Box III. Tracer Products for Midline Assessment

1. Cotrimoxazole 120mg tablets
2. Zinc 20mg tablets
3. Coartem (lumefantrine/artemether) 1 x 6 tablets (ACT) and / or Coartem (lumefantrine/artemether) 2 x 6 tablets (ACT)
4. Amoxicillin 250mg capsules
5. Malaria RDTs
6. ORS sachets or Oral Rehydration Salts
7. Ready to Use Therapeutic Food-Plumpynut sachets (RUTF)
8. Male Condoms
9. Depot-medroxy progesterone acetate (Depo Provera or Petogen) vials (DMPA)
10. Combined oral contraceptives (COC)

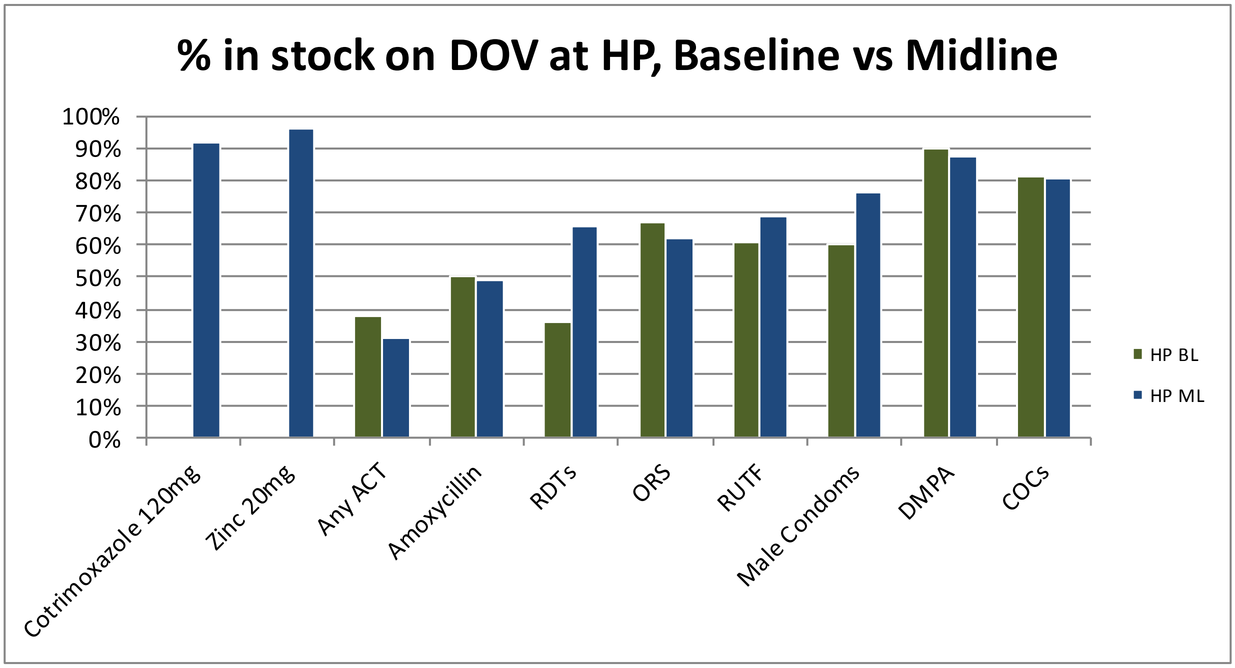
On commencing the survey, the HEWs where asked which products on the list of ten tracer commodities they currently manage. At baseline, the training for HEWs to manage pneumonia in the community had not yet been rolled out therefore cotrimoxazole 120mg was not expected. A similar situation occurred with zinc 20mg, which had not yet been rolled out for the treatment of diarrhea. However at the time of midline, training for managing pneumonia and diarrhea had been rolled out and therefore the percentage of HEWs managing cotrimoxazole 120mg and zinc 20mg had significantly increased. Overall, at midline, a higher percentage of HEWs managed key products compared to baseline as can be seen below in Figure VIII.

Figure VIII. HEWs who managed each product, baseline vs. midline



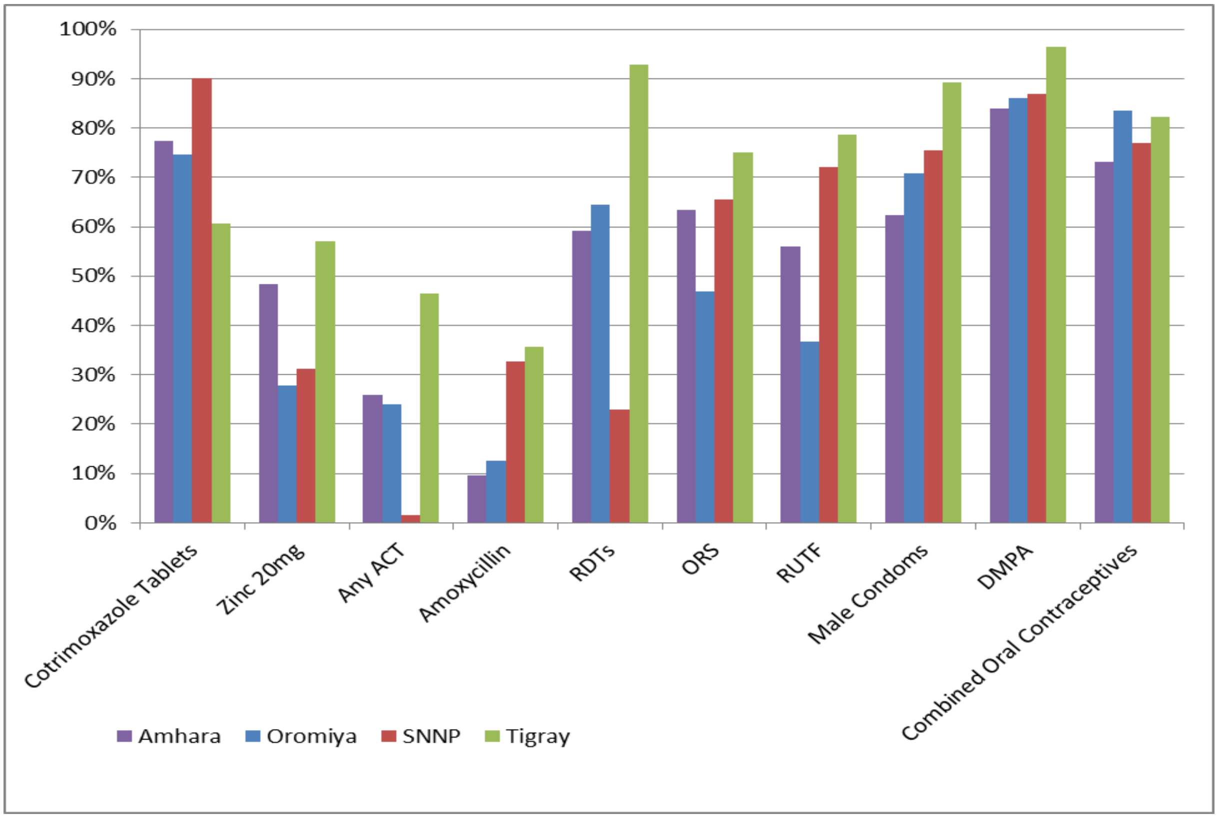
At midline, we found that across all arms, there was a higher percentage availability of products on day of visit (DOV) compared to baseline as is seen below in Figure IX. However, product availability for ORS was found to be lower at midline compared to baseline. Discussions from regional DVWs in Amhara and Tigray showed that the focus has been more on zinc rather ORS to treat diarrhea resulting in a reduction in the percent of HEWs who ask for resupply of ORS when stocked out.

Figure IX. Product availability on day of visit, baseline vs. midline



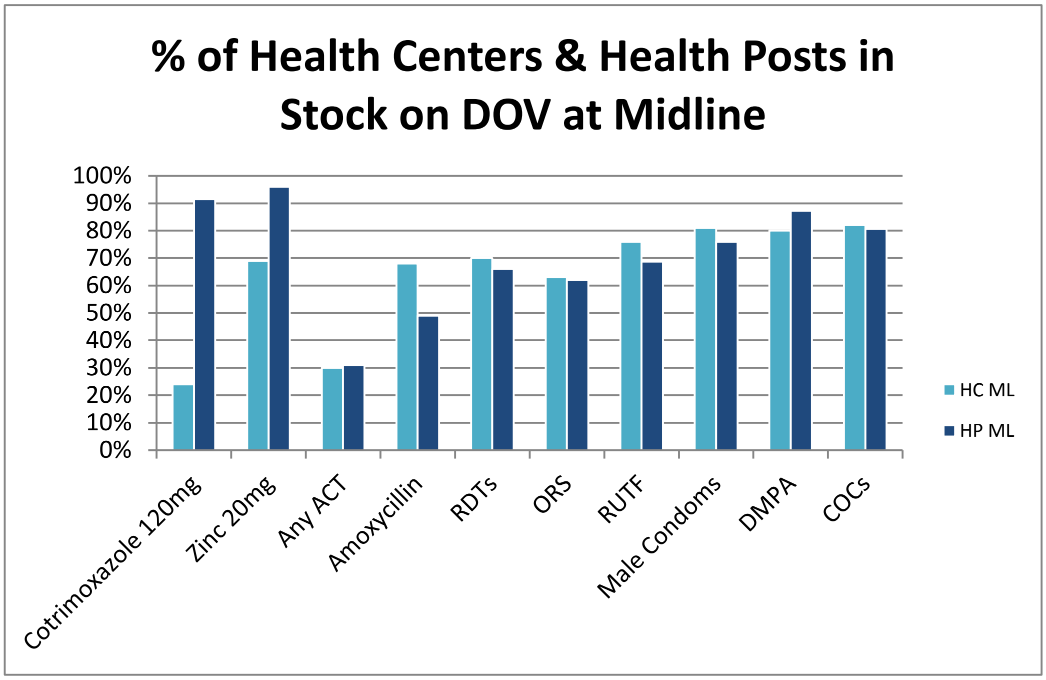
Overall the availability of family planning products was higher across all regions compared to ICCM products as seen below in Figure X. HEWs in SNNP stated that availability of family planning products compared to ICCM products was in general better due to consumption based resupply. Feedback from the Tigray DVW was that since ICCM is a newer program compared to FP, it could be that ICCM products are slow moving at the HP compared to FP products. In Amhara, respondents felt that FP products are loose and therefore faster and easier to distribute than kits; partners had been supporting the distribution of FP products for a longer time period compared to ICCM products and the collection of ICCM products from different sources and kitting takes time which has an effect on product distribution. Respondents from Amhara also stated that for FP, the reporting system has been strengthened at all levels up to HC which has resulted in increased data visibility and secured availability of FP products at resupply point. In comparison, ICCM delivery has been through kits and managing the recording and reporting system has been a challenge.

Figure X. Product availability across regions by type of product



The results also showed that there were some products such as Amoxicillin, RDTs, RUTF and male condoms that were more available at the HC versus HP at midline as shown below in Figure XI. There was feedback from the Amhara DVW that for RUTF, the product is heavy and therefore challenges of distributing the RUTF to HPs might have contributed to less product availability at HPs. It is important to note that the sample size for zinc is small and so while the percent of product available on DOV at the HP looks high, the data collected was from a small a percentage of HEWs. The feedback from the DVW in SNNP was that HCs did not stock zinc, so when HEWs tried to order after being trained they couldn't get resupplied so they stopped ordering it and therefore do not consider that they manage zinc.

Figure XI: Percentage of Health Centers & Health Posts in Stock on DOV at Midline



Discussion

The results of this midline assessment showed that implementation of the IPLS training for HEWs did not occur as designed across any of the arms as HC staff used different opportunities to train HEWs and tended to train HEWs in groups. In the OJT arm, training was often conducted with more than one person, instead of one-on-one training as per the definition of OJT. In the group training arms, HCs often trained HEWs on all five ready lessons in one day and were less likely to include problem solving or provide one lesson each month during the PHCU meetings. This might provide one explanation for why the results of the competency assessment showed no significant difference in skill levels between arms.

Despite the training not being implemented as designed, HEW competency still improved across all arms; however, completing a bin card and completing the HPMRR were the two exercises of the four that yielded the lowest scores. The low scores could be due to a number of reasons: insufficient time to learn complex tools such as the bin card and HPMRR, especially as HEWs voiced concern about the inadequate time allocated for trainings; the need for repetitive training or OJT on these topics which may not have occurred during the intervention period; and the language barrier created by the lack of translation of forms from English into local languages. Furthermore, the HPMRR form may also have not been completed frequently in the six months between training and evaluation resulting in HEWs not having mastered the skills due to insufficient practice. A measurement of competency after a longer period of time, perhaps another six months, might yield more meaningful results, allowing HEWs more time to process and practice the training content.

The assessment also found when comparing the intensive and non-intensive arms that training with follow-up support (intensive arm) resulted in better training coverage and supply chain tool availability compared to when little or no follow up was provided (non-intensive, OJT arms). Eighty-four percent of HEWs in woredas within the intensive arm report receiving IPLS training, compared to 62% in non-intensive and 17% in OJT (group training TOT completed by April 2012 and OJT TOT by July 2012), 72% had flipbook and 95% had blank HPMRR available in intensive arm compared to 61% and 70% in non-intensive and 40% and 46% in OJT arm. DVWs results emphasized the importance of follow up to ensure the implementation of training HEWs in IPLS.

Feedback from the data validation workshops highlighted some of the benefits of a group training including that this approach brought together different facilities with different levels of experiences, was time effective, and promoted experience sharing among HEWs. There were also some benefits of OJT that were highlighted such as being prone to fewer interruptions during training. There was some perception that group training requires the provision of allowances to HEWs, and therefore OJT was more cost effective. However per diems were not provided during Phase 1 and therefore both methodologies had the same level of funding dedicated to its implementation.

Given that implementation of IPLS training deviated from the design across the different arms, rather than selecting one training approach, important elements of training were identified across the arms and regions. During the DVWs, HEWs from SNNPR and Oromiya voiced that group training was their preferred method, particularly because they could share their experiences. This may explain why most HC staff tended to train HEWs by group and why OJT, which was expected to be done individually, was also conducted as a group at the HC. HEWs from Amhara also expressed that trainers should come to the HP and provide OJT on how to use the tools. During FGDs, key training elements that were highlighted as positives included conducting regular review meetings, providing practical training and demonstrations, and giving HEWs recognition. The importance of these elements were confirmed during DVWs.

Recommendations

IPLS training for HEWs by HC staff was effective in improving competency, although there was no significant difference in competency across arms. Therefore one methodology could not be recommended over the other. However, focus group discussions did suggest that the group training materials were more effective as they were interactive and practical and that OJT was primarily done as a group with less interaction. The recommendation, therefore, was that the OJT materials should be revised to be interactive, practical and structured.

Following the experience that most training of IPLS for HEWs was done in an opportunistic manner, and primarily in a group setting, the recommendation was that HEWs should be trained using the same creative and opportunistic approach. Examples of existing events at both HC and WoHO levels that could be used included other trainings, review meetings, PHCU meetings, or salary days. This was perceived to be an effective and affordable way to reach the majority of HEWs, and therefore improve training coverage. To ensure HCs are able to tap into existing opportunities to train HEWs and still maintain quality of training, the recommendation from the various stakeholders at the DVWs was to adapt the curriculum so both OJT and group trainings methodologies were included in the same training manual and that HC staff should be trained in both methodologies so they could be flexible to the circumstance and use a combination of both to achieve better competency and coverage amongst HEWs.

The results showed that follow-up support to HC (intensive arm) resulted in better training coverage and supply chain tool availability compared to when little or no follow up was provided (non-intensive, OJT arms). It was recommended that woreda supervisors should be responsible for supporting HC staff to implement the IPLS for HEWs trainings, and therefore the woreda staff should also be oriented to the IPLS for HEWs training materials. Zonal and woreda staff should also support the strengthening of the linkage between HC and HEWs and encourage regular PHCU meetings that include time to address gaps in capacity and other supply chain problems.

As competency after initial training was only just above 60% for more complex topics, such as HPMRR and bin card, supervision and refresher trainings (including through repetition of modules) must be given to HEWs following initial trainings. Feedback from various stakeholders in the data validation workshops was that problem solving was also very important for supporting the HEWs in implementing the IPLS and further work needs to be done to incorporate problem solving into the PHCU meetings and implement the use of the tracking tool for problem solving.

Other recommendations from the DVW highlighted the importance of ensuring the availability of forms and flip books at the HP level. Therefore the recommendation was to ensure that there was adequate budget at the HC level for duplication of forms and the IPLS training guide, and for distribution of flip books to the HP level. In addition, it was expressed that good performing HEWs should be recognized.

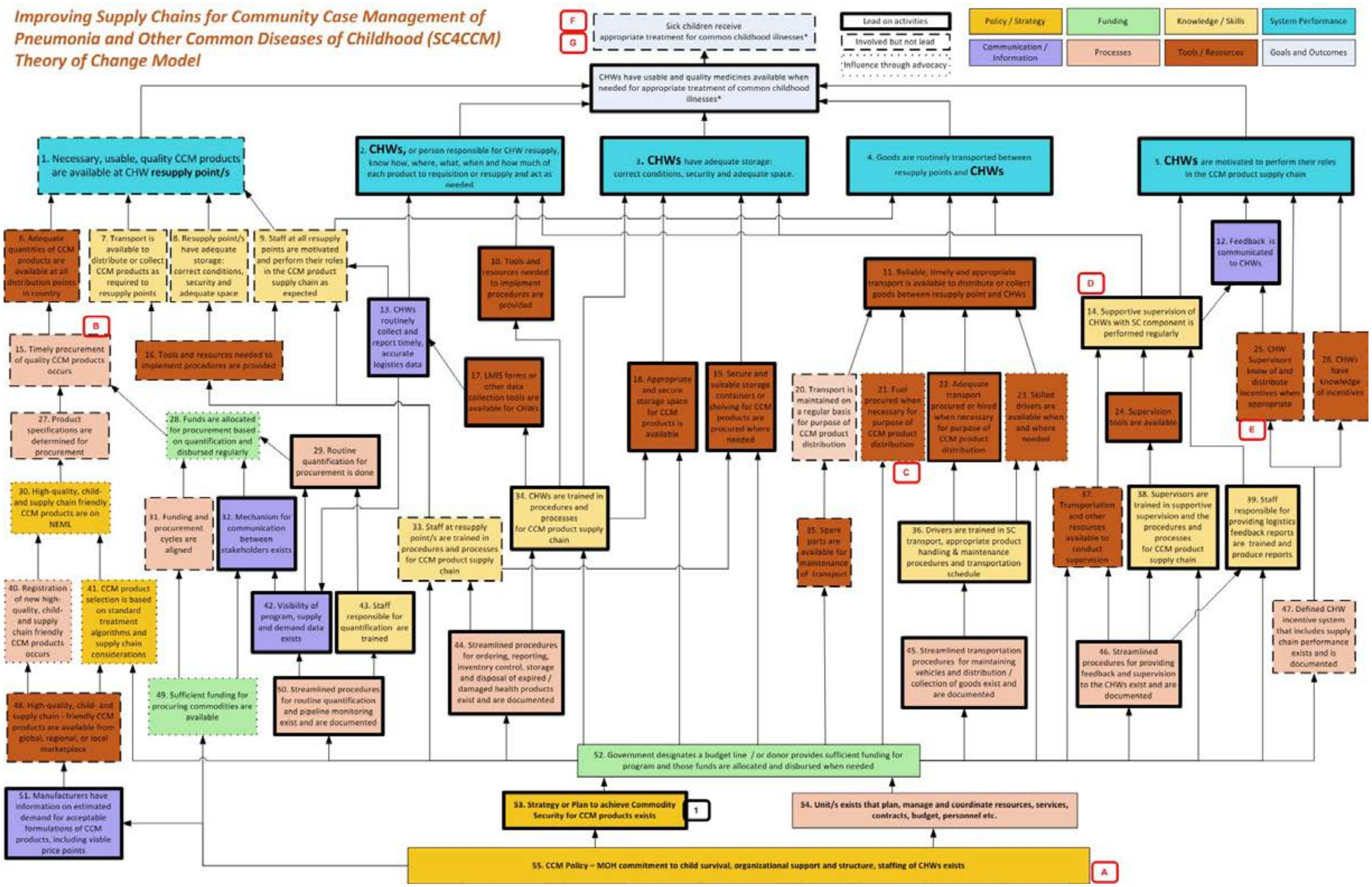
Conclusion

Improving the skills of HEWs in supply chain management is essential to strengthening the supply chain, and laying the foundation for improving the overall availability of essential health products at the community level. Evidence from the midline assessment and data validation workshops shows that imparting fundamental supply chain management knowledge and skills to HEWs is feasible and can be accomplished in an affordable, effective manner using HC staff and existing opportunities. The assessment results also identify important lessons and guidance on key elements to include in the training curriculum and approach to ensure its success. There was broad consensus that scaling up the modified training approach to other woredas is essential for improving supply chain skills and ICCM product availability to health posts, and should be considered a priority in efforts to achieve MGD4 goals and Ethiopia’s specific plans to reduce child mortality rates and to provide quality child health services nationally.

Appendix A

Theory of Change Graphic

In the diagram CHW = HEW in Ethiopia



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