Clinton Health Access Initiative

Accelerating Policy Change, Translation and Implementation for Pneumonia and Diarrhea Commodities in Ethiopia

Baseline Survey Report

Submitted to the Bill and Melinda Gates Foundation

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LIST OF ACRONYMS

Amox DT	Amoxicillin Dispersible Tablet
ART	Antiretroviral Treatment
BMGF	Bill and Melinda Gates Foundation
CBNC	Community Based Newborn Care
CHAI	Clinton Health Access Initiative
DTC	Drug and Therapeutic Committee
EFY	Ethiopian Fiscal Year
EPS	Ethiopian Pediatric Society
ESPA+	Ethiopian Service Provision Assessment plus
FMHACA	Food, Medicine, and Healthcare Administration Control Authority
FMoH	Federal Ministry of Health
GC	Gregorian calendar
HC	Health Center
HP	Health Post
HPMRR	Health Post Monthly Reporting and Requisition Form
ICCM	Integrated Community Case Management
IFRR	Internal Facility Report and Resupply Form
IMNCI	Integrated Management of Neonatal and Childhood Illnesses
IPD	Inpatient department
IPLS	Integrated Pharmaceutical Logistics System
KII	Key Informant Interview
LMIS	Logistics Management and Information System
MSD	Medical Service Directorate
NICU	Neonatal Intensive Care Unit
O2	Oxygen
OPD	Outpatient department
ORS	Oral Rehydration Salts
PFSA	Pharmaceuticals Fund and Supply Agency
PLMU	Pharmaceutical and Logistics Management Unit
POx	Pulse oximeter
PSM	Procurement Supply Chain Management
RDF	Revolving Drug Fund
RHB	Regional Health Bureau
RRF	Report and Requisition Form
SCMS	Supply Chain Management System
SNNPR	Southern Nations, Nationalities and Peoples' Region
SOPs	Standard Operating Procedure
UNICEF	United Nationals Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Between Q4 2015 and Q1 2016, in collaboration with the FMoH and PFSA, CHAI completed a baseline survey to measure the availability of key commodities necessary for accurately diagnosing or treating pneumonia and diarrhea in children under-5. The results of this survey will provide the basis for future programmatic evaluation, as well as program planning and budgeting.

Methodology

The study design used mixed methods to understand the landscape of child health delivery services in Ethiopia, including a health facility based cross-sectional survey and a separate survey at regional PFSA hubs and woreda health offices. Additionally, a qualitative component of the study was conducted to provide contextual information. Data collection was rigorously monitored and was subsequently analyzed using STATA.

Results

The qualitative study findings revealed that although the FMoH adopted the 2014 WHO recommendations on childhood diarrhea and pneumonia management, the guidelines have not yet reached all facilities. Additionally, regional respondents were unaware of the recently revised IMNCI guidelines (to include pulse oximetry) and were unsure how they would implement them. Furthermore, policies/guidelines on medical oxygen use and supply systems were unavailable, and respondents felt the current system was irregular, ineffective and not cost-effective. All respondents felt there was a clear resource gap for oxygen, and current reliance on partners was not sustainable.

The quantitative assessment also found that essential medicines (ORS/Zinc and Amox DT) have only been recently included in the RRF, but these forms have not been distributed and are not being used at the facility level. The assessment also found numerous IPLS related issues, such as low training on IPLS, poor availability of IPLS formats, and IPLS forms which have not been updated to include key commodities. There was significant variation of IPLS implementation between regions and facility types. There was also a weak supply chain management linkage between the health centers and health posts. Few health centers and hospitals had functional DTC across the four regions, and training coverage on DTC was very low.

Commodity availability widely varied between regions and facility levels. In general, oxygen available was much higher at the hospital level and lower at the health center level. However, staff members lacked training on providing oxygen therapy and facilities lacked SOPs/job aids for providing oxygen therapy. As anticipated, the Zinc/ORS co-pack availability was fairly low across all regions and facility types. ORS availability tended to be higher at the hospital level, but was relatively low at the health post and health center level. Zinc availability was highly variable between regions/facility types – i.e. lower in Oromia and SNNPR, but higher in Amhara and Tigray. Amx DT 250mg and 125mg availability varied widely between regions, and stock at the health center level may indicate there is a missing link to distribution at health posts. Furthermore, the source of the majority of these commodities was through non-PFSA channels, which makes tracking difficult for stocking and refill decision making.

1. INTRODUCTION AND BACKGROUND

1.1 Background

In Ethiopia, the under-five mortality rate has declined by two thirds - from 204/1,000 live births in 1990 to 68/1,000 in 2012 - thus meeting Millennium Development Goal 4 (MDG 4) on Child Survival three years ahead of time. However, the mortality reduction was not uniform across the different childhood age groups, geographic and socio-demographic population groups. Moreover, despite the successes, the national child survival program had challenges which included: delay in distribution of Integrated Community Case Management (iCCM) supplies to health posts (HPs), sub-optimal integrated supportive supervision at all levels, weak referral linkage between HPs and health centers (HCs) and sub-optimal supply chain management system for timely delivery of ICCM supplies to HPs.

To build on the successes while addressing the challenges, the Federal Ministry of Health (FMoH) formulated an ambitious National Newborn and Child Survival Strategy (2015/16-2019/20) with the goal of reducing under five mortality from 64/1,000 (2013) to 29/1,000 by 2020; the infant mortality rate from 44/1000 to 20/1000; and the neonatal mortality rate from 28/1,000 to 11/1,000.[1]

To achieve these goals, Ethiopia's national strategy has specifically targeted pneumonia, diarrhea, and neonatal conditions as the major opportunities to drastically reduce childhood mortality. An estimated 60,000 children die annually due to pneumonia and diarrhea and account for 18% and 9% of all under-five deaths, respectively[2]. Eliminating deaths due to pneumonia and diarrhea alone would lead to 61% of the lives saved needed to achieve the national strategy goals.

1.2 Program Context

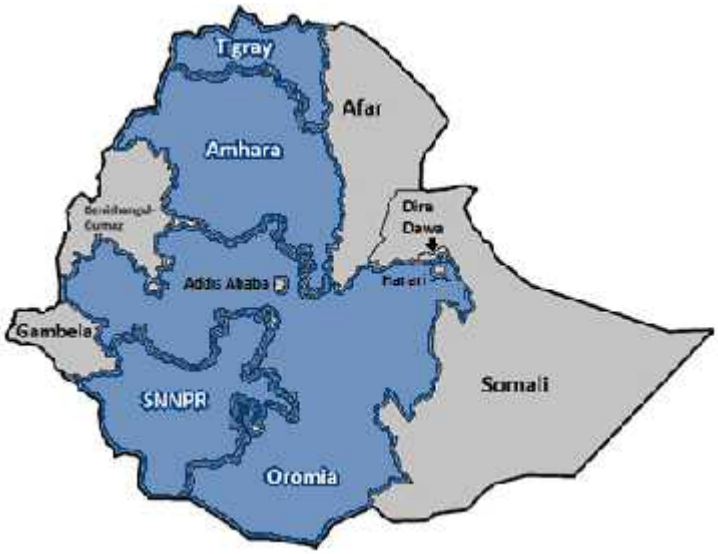
The Clinton Health Access Initiative (CHAI) in collaboration with the FMoH, Pharmaceutical Fund and Supply Agency (PFSA), and the Bill and Melinda Gates Foundation (BMGF) will strengthen the National Procurement Supply Chain Management (PSM) Systems to ensure regular availability of lifesaving child health commodities for pneumonia and diarrhea at critical points of care. These commodities include Oral Rehydration Salts (ORS), zinc, amoxicillin dispersible tablets (Amox DT), oxygen therapy, and pulse oximeters. This program will significantly contribute towards the achievement of the National Newborn and Child Survival Strategy with an emphasis on PSM, in order to dramatically reduce child deaths from pneumonia and diarrhea in particular.

The timeline of the program is from October 2015 to October 2019. The program will be implemented in Amhara, Oromia, SNNPR and Tigray (Figure 1 below).

[1] National Newborn and Child Survival Strategy (2015/16-2020)

[2] GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age–sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2015; published online Dec 18. http://dx.doi.org/10.1016/S0140-6736(14)61682-2.

Figure 1: Map of Ethiopia
Program Regions Highlighted in Blue



1.3 Purpose and Objectives of the baseline assessment

General Objective

The main objective of the baseline assessment was to measure the availability of key commodities necessary for accurately diagnosing or treating pneumonia and diarrhea in children under-5. The results provide baseline data for program sites and will be used to evaluate whether the availability of essential commodities have improved at health posts, health centers and hospitals, and PFSA hubs as a result of the program interventions. Furthermore, the results help to inform the program work plan and budget by identifying key barriers.

Specific Objectives

This baseline survey has the following specific objectives:

- To provide a comprehensive background analysis of similar assessments and reports relating to availability of essential child commodities in Ethiopia, particularly in the four program implementation regions – Amhara, Oromia, SNNP and Tigray regions;
- To determine benchmark values or set targets for key program indicators in Amhara, Oromia, SNNP and Tigray regions;
- To inform program work plan and budget revisions, and clarify implementation arrangement in Amhara, Oromia, SNNP and Tigray regions;
- To assess the medical oxygen policy environment, availability and supply system at various levels; and
- To draw concrete and workable recommendations for program implementation as well as initiate policy dialogue within the FMoH.

1.4 Key baseline outcomes, indicators and definitions

Table 1: Baseline Outcomes, Indicators and Definitions

Program outcomes	Program Indicators	Definition
Outcome 1: Alignment on Key Program Design	- Joint Accountability Framework, Joint Workplan, Refined Budget	Documentation provided demonstrating joint accountability between FMoH, PFSA and CHAI for program.
Outcome 2: Increased availability of O2 at appropriate levels of care	- Proportion of health facilities with O2 available - Cylinders with the proper functional equipment - Concentrator with the proper functional equipment - Oxygen piping with the proper functional equipment	**Numerator:** Number of health centers and hospitals with O2 available on the day of the survey **Denominator:** Number of health centers and hospitals surveyed
Outcome 3: Increased availability of Pneumonia diagnostic equipment (POx & respiratory rate timer) at appropriate levels of care	- Proportion of health facilities with POx available - Proportion of health facilities with respiratory rate timer available	**Numerator:** Number of facilities with POx available on the day of the survey and in the area of the facility that provides in-patient pediatric care **Denominator:** Number of facilities surveyed
Outcome 4: Increased availability of AMOX DT at appropriate levels of care	- Proportion of health facilities with Amox DT available; health post data where available.	**Numerator:** Number of facilities with either Amox DT 125mg or 250mg on the day of the survey **Denominator:** Number of facilities surveyed
Outcome 5: Increased/ sustained availability of ORS and zinc at appropriate levels of care	- Proportion of health facilities with Zinc/ORS (co-packed) in-stock on the day of the assessment	**Numerator:** Number of facilities with Zinc/ORS co-packs in-stock on the day of the survey **Denominator:** Number of facilities surveyed
Outcome 6: IPLS Standard Operating Procedures (SOPs) and related formats (IFRR, RRF, HPMRR) revised to strengthen SCM through reporting, requisition and distribution of essential child commodities	- Proportion of HFs received revised IPLS SOPs and related tools (revised to include essential child commodities)	**Numerator**: Number of facilities with IPLS SOPs available on the day of the survey **Denominator:** Number of facilities surveyed **Numerator:** Number of health centers and hospitals with updated IFRR and RRF forms available on the day of the survey **Denominator**: Number of health centers and hospitals surveyed **Numerator:** Number of health posts with updated HPMRR forms available on the day of the survey **Denominator**: Number of health posts surveyed

2. METHODOLOGY

2.1 Study Design and Target Population

The study design used mixed methods to understand the landscape of child health delivery services in Ethiopia. A health facility based cross-sectional survey was used to collect baseline data on the key outcomes and program performance monitoring indicators. The survey was conducted with health care workers in a representative sample of health posts, health centers, and hospitals in Amhara, Oromia, SNNP and Tigray regions. A separate survey was also conducted at regional PFSA hubs and woreda health offices. In addition, a qualitative component of the study was conducted to provide contextual information regarding the policy, regulatory, and operational environment within which child healthcare services in Ethiopia are delivered. Key informant interviews (KII) were conducted with staff at the regional health bureaus (RHBs) and federal institutions, such as the FMoH, PFSA, and the Food, Medicine, and Healthcare Administration Control Authority (FMHACA) and implementing partners who have direct experience in child health programs or with essential child commodity supply management.

2.2 Sample Size and Sampling Procedure

Quantitative Survey

In this assessment a total of 372 health posts, 315 health centers, 109 hospitals, 117 woreda health offices and 12 PFSA hubs were included in the four program target regions. The overall response rate was 99.8%. The sample size for this baseline assessment was calculated using the formula and statistical assumptions presented below.

$$n = Z_c^{\,2} \times \frac{P \times (1-P)}{d^2} \times FPC$$

Where:
N = Sample size
Zc = Confidence level, 1.96
FPC = Finite population correction factor
P = Availability of key essential child commodities on the day of the survey, 50%
d = Margin of error, 10%

Since there is no current data on availability of all key essential commodities, we assumed P=50% in order to maximize the study power given the other parameters. Table 3 below shows us the sample facilities selected for assessment by region.

A multi-stage, stratified cluster sampling technique was used to select HCs and HPs in each of the four regions. HPs and HCs had been sampled in clusters with woredas serving as the cluster. Of the total 118 selected woredas, 117 had been assessed from the four regions. Accordingly, the woredas had been stratified into new and overlapping sites with BMGF partners. The purpose for stratifying prior to

selection was to ensure that woredas that receive partner support and those that do not are both represented in the study sample.[3] The sample size of woredas were also distributed equally (50% each) between sites overlapping with BMGF implementing partner sites and new sites. In each stratum, woredas had been selected using probability proportional to size. Table 2 below shows a sample distribution of woredas.

Table 2: Sample Distribution of Woredas

Site type	Tigray	Oromia	Amhara	SNNPR	Total
Existing BMGF interventions	4	24	18	13	**59**
New sites	11	23	10	15	**59**
Total	**15**	**47**	**28**	**28**	**118**

Woredas served as the primary sampling unit (PSU), and within each woreda, HCs were randomly selected for the study. A complete list of HCs in each of the sampled woredas was compiled and HCs were randomly selected from each sampled *woreda. In general,* every HC within a region had an equal probability of being selected. Additionally, HPs that are supplied by one of the HCs selected for the study were sampled. Hospitals were selected independently using a simple random sample of all hospitals in each region. For PFSA hubs, all 12 well-functioning hubs supplying facilities in the program regions were taken (see Appendix C).

Table 3: Sample, by Region and Facility Type

Site Type/Region	Tigray	Oromia	Amhara	SNNPR	Total
Health Post	86	104	92	90	**372**
Health Centre	64	86	85	80	**315**
Hospital	16	35	29	30	**110**
Woreda Health Office	15	45	28	29	**117**
PFSA Hub	2	6	3	1	**12**
Grand total	**183**	**276**	**237**	**230**	**926**

This baseline survey was completed successfully with a high response rate 99.8% (926/928) and within the planned time frame.

Key Informant Interviews (KII)

A total of 10 key informant interviews were conducted with representatives from the FMoH, PFSA, FMHACA, RHBs, and key partner organizations (See Appendix D for list of KII organizations).

[3] The study is not specifically powered to detect differences between BMGF IP and non-IP woredas.

2.3 Data Quality Assurance

In order to improve the quality of data the following steps and procedures were followed:

Piloting: The data collection tools were piloted and revised before they were administered for the actual assessment. The tools were piloted in facilities and hubs that were not selected for the study in order to minimize contamination of information.

Training: The study team participated in a three day (including pre-testing) interactive training session to ensure data accurately and make sure that data is collected in a professional and ethical manner. Trainees were given tablets uploaded with questionnaire to be used for the mock-interviews, and had practical exercises with a number of rehearsal and demonstrative interviews so as to elaborate concepts and procedures. The survey teams were orientated on how to use the tablets, implement the survey effectively, and maintain the ethical aspect of the assessment. All supervisors and data collectors were involved during the instrument field testing.

Training manual: An operational manual for training of data collectors was adapted from CHAI's previous training manuals. This clear and simple manual contained the purpose of the assessment, the data collection instrument, data collection/facilitation techniques, process of collecting data using tablets, troubleshooting issues with the tablets, methods of sampling and identifying respondents, as well as detailed explanation of each question. The manual also included prompt cards with a picture of the items to be assessed, which was used by both data collectors and supervisors in order to avoid confusion and save time during the assessment.

Field monitoring: During the data collection period, CHAI monitored the quality of data. Since the data was being collected electronically, CHAI was able to conduct analyses in parallel with data collection to actively identify potential quality issues and address them immediately. No major quality issues were observed.

2.4 Data Collection Process and Analysis

A structured questionnaire adapted from other country assessments and Ethiopian Service Provision Assessment plus tool (ESPA+) was used to collect the baseline survey. The questionnaire was pre-tested in selected facilities and hubs to refine the survey before finalizing it for the study. The questionnaire was programmed into SurveyCTO for electronic data collection. Tablets were used for the data collection purpose and the electronic data collection technique improved the data quality and minimized time needed for data entry and cleaning.

The data collection tools was piloted and revised before the actual assessment. The survey teams and supervisors were trained for three days. Trainees were given with tablets uploaded with the questionnaire to be used for the mock-interviews. They were trained on the tools, basic interview techniques and on how to maintain the ethical aspect of the assessment. The trainees were guided by the training manuals prepared for this purpose. Data analysis was conducted using STATA.

2.5 Limitations of the Baseline Survey

- The fact that this is a cross section study makes it difficult to assess the temporal relationship between variables or elicit cause and effect.
- This health facility survey cannot be used to estimate knowledge, attitude and coverage of key interventions in the same way that community-based HH surveys would be used.

3. BASELINE SURVEY KEY RESULTS

This baseline report has two sections. The first section presents the qualitative study findings mainly focusing on the policy level issues around key pneumonia and diarrhea essential child health commodities. The second section of this baseline reports presents information on the quantitative part of the facility survey.

3.1 Qualitative Study Findings

Childhood Diarrhea Management Policy Assessment Findings

According to the interviews with the FMoH and RHBs, Ethiopia has adopted the World Health Organization (WHO) recommendation on childhood diarrhea management (as least on the use of zinc and ORS) and included it in the current IMNCI (Integrated Management of Neonatal and Childhood Illnesses) as well as iCCM guidelines and training materials.

With regards to regional adoption and implementation, respondents from RHBs and partners mentioned that the new recommendations are adopted and implementation is underway in most regions, focusing on zones/towns and health facilities where there is strong partner support. Key informants mentioned that IMNCI implementation is limited in case of hospitals as physicians do not follow IMNCI chart books. Respondents said that their means of assessment for facility level implementation is availability of IMNCI chart books and algorithms. However, they mentioned that it is difficult to know the proportion of facilities which have IMNCI guidelines due to lack of facility level data.

Key informants also mentioned that iCCM coverage is variable between regions, zones and health posts. For example, in Tigray, the number of health posts covered with iCCM training is 100% (658/658) while in Oromia the coverage is 95.7% (from the existing 1,320 functional health posts). However, completion of training doesn't necessarily mean that the health post level service is following the newest iCCM guidelines.

When asked about the version of IMNCI & iCCM guidelines that regions are using, some mentioned they use the 2010 version while others are using the more recent one, which supports the idea that the regions are at different phases of implementation.

The FMoH said that they do have a specific plan to introduce/scale up zinc/ORS co-packing and distribute it in all regions. The partner that the ministry mentioned for this initiative is UNICEF as they are the ones currently supporting health posts to manage diarrhea in iCCM program. However, none of the regions had any idea about the zinc/ORS co-packing initiative and they were unaware of any partner working in their respective regions at this time.

Childhood Pneumonia Management Policy Assessment Findings

According to the interview with the FMoH and RHBs, Ethiopia has now adopted the WHO recommendation on childhood pneumonia management (*using Amoxicillin as the first line drug and*

Amox DT for iCCM) and included it in the current IMNCI as well as iCCM guidelines and training materials. According to the regional health bureau respondents, Amoxicillin/Amox DT and cotrimoxazole are the first line to be used at health post level for the management of pneumonia.

The regional level implementation of the new IMNCI and iCCM guidelines are also variable in terms of iCCM training coverage and availability of new guidelines. The FMoH, RHBs, and partners believe that it is adopted and implemented in most regions, zones and health facilities. As an example, in Oromia they said that 86% of zones and towns adopted and implemented the new IMNCI and iCCM guidelines revised according to the 2014 WHO recommendation on pneumonia management. Regions mentioned that they are trying to verify the implementation through supervision and site visits, but they have not yet reach all facilities and health posts following the trainings.

The key informants from the FMoH and partners mentioned the recently revised IMNCI guideline (2015 version) to recommend pulse oximeter use as an important pneumonia diagnosis and treatment monitoring equipment at health center & hospital level. However, regional respondents said that they are not aware of this update and they are unsure as to how the regions are going to procure, distribute and monitor its implementation. A respondent from a RHB mentioned that the IMNCI guidelines they are using (2010 version) doesn't include pulse oximetry and that is the only guideline available in the health facilities, unless partners printed and gave the new version to selected facilities.

Regarding the pulse oximeter procurement process, the respondent from the FMoH believes that to date the ministry and partners are the ones procuring pulse oximeter for health center and hospital levels. The respondent from PFSA also said that they are procuring pulse oximeters as per the ministry and hospitals' request.

A respondent from Tigray RHB mentioned that:

> *"… Though the existing guideline doesn't recommend pulse oximeter, few hospitals procured from their budget (Axum Hosp.) and some other hospitals received a FMoH procured pulse oximetry. Some NGOs also procured and distributed pulse oximetry for use in Neonatal Intensive Care Units (NICU). The Ethiopian Pediatric Society (EPS) also gave a set of medical equipment/supplies named infant warmer that have two small cylinders of oxygen and pulse oximeter to very few facilities. Otherwise, no regular availability of pulse oximeter at hospitals and none at health centers…"*

All respondents agreed that there is no clear data or information on pulse oximeter availability at health facility level. They also stated that there isn't any inventory data as to which ones are functional and which are not. The FMoH mentioned that they have a plan to do inventory of the existing ones and fill gaps accordingly. A respondent from Tigray RHB mentioned that:

> *"…we have started inventory of medical equipment in our region and we will look which ones are functional and which ones are non-functional…"*

Oxygen Use and Supply System Related Assessment Findings

According to the FMoH, RHB and partner interview findings, currently there is no policy or guideline on medical oxygen use and supply system in Ethiopia. All of the respondents said that there are no recommendations or guidance on the oxygen equipment procurement and use in the country. Key informants mentioned that the current oxygen supply system, including the transportation system, is ineffective, inefficient and not systematized. The different actors, including FMoH, PFSA, RHBs and health facilities, lack clear roles and responsibilities. A regional respondent mentioned that the current system is not cost effective as health facilities are going to capital cities to get their cylinders refilled.

PFSA said that they buy oxygen concentrators when the request comes from the FMOH, RHBs or hospitals. A United States Agency for International Development (USAID) funded program called *Supply Chain Management System* (SCMS) said that they have also procured and distributed oxygen concentrators and masks for all Antiretroviral Treatment (ART) sites (around 1100).

All respondents mentioned that it is critical to have policy on medical oxygen use and transportation system with clear roles and responsibilities of every stakeholder as well as level care for each kind of equipment (pulse oximeters, oxygen cylinders and concentrators).

One of the key informants said that:

> *"Oxygen is one of the lifesaving commodities, like blood, and it should be available and used properly at all level of care (should not be limited to hospitals only). The policy should emanate from the real challenges that the facilities are facing now…"*

Regarding the unit, directorate or agency responsible for oxygen production, distribution and requisition, respondents said the Medical Service Directorate (MSD) and Pharmaceutical and Logistics Management Unit (PLMU) are responsible at the FMoH level. PFSA also said that they have the capacity to handle oxygen procurement and distribution if they get a timely request from the FMoH, RHB or health facility. Similarly, the Pharmaceutical Supply and Administration core process team was cited as the main unit for handling oxygen issues at the RHB level. At the facility level, the pharmacy case team was mentioned as the unit handling all oxygen quantification, procurement, refill and distribution processes at a facility level.

A key informant from Oromia RHB said:

> *"…The current understanding in the region is that oxygen cylinders are supplied to hospitals and type A HCs. However, the FMHACA has included on its checklist, saying that all HCs should have concentrators and oxygen cylinders. The region's Medical Equipment service, which is under pharmaceutical supply and administration core process, is somewhat engaged on maintenance activity and not on oxygen equipment supply chain and utilization management activities…"*

All informants stressed that these units don't have clear and written mandate and that is why they activity is lagging behind. The participants suggested preparing a clear term of reference on the roles and responsibilities and assigning relevant units will improve the current situation.

When asked about resources, regions mentioned that there is a clear resource gap and most of the oxygen activities at the moment are dependent on partner support.

A Tigray RHB key informant said:

> *"…At the moment we are working in collaboration with partners and we still need the support as we have huge gaps. Again, this is the time we need partners to transform our oxygen system in facilities to level of a middle income country as we are moving to that direction…"*

Supply Management System Assessment Findings

Pneumonia and Diarrhea Essential Child Commodities Quantification Process (ORS, Zinc, Amox DT)

According to PFSA's response, there are two types of quantification for pneumonia and diarrhea essential pharmaceuticals in the public sector, depending on the nature of funding source and management:

- **Decentralized**: here the health facilities are expected to quantify and send their annual demand with close support of PFSA, RHBs and woreda health office and then the results are sent to the nearby PFSA hub. The PFSA branch, after reviewing, aggregates the quantification result of all health facilities under their catchment before sending the final result to central PFSA. In the same manner, all branches send the quantification result to central PFSA. Once the result are reviewed and finalized at the central level, they reflect the demand of almost all public health facilities. Using this result and other information, the supply plan is prepared and used as input for procurement initiation. The previous year (2007 EFY or 2014/15 GC) quantification exercise did not include zinc and Amox-DT but will be considered in the coming year Revolving Drug Fund (RDF) or budget quantification.
- **Centralized**: This is mainly exercised for resources mobilized from donors and performed at central level using all required information obtained from program experts and logistics unit of the FMoH and PFSA. Currently, almost all essential child commodities, such as Amox DT, zinc tablets and ORS are quantified by this type of system

Inclusion of Pneumonia and Diarrhea Essential Child Commodities in the Current IPLS Tools

The PFSA key informant mentioned that pneumonia and diarrhea essential child commodities (Amox DT, zinc tablet and ORS) are included in the reporting and requisition format and other related IPLS implementation tools.

Pneumonia and Diarrhea Essential Child Commodities Procurement Process

According to PFSA, the procurement process and who procures any commodity depends on the fund source. If the fund is from RDF (e.g. ORS), the whole process is initiated and processed exclusively by

PFSA based on health facility's demand (RRF based). But if it a program commodity (usually donor resources such as Global Fund), the procurement process is usually initiated by the FMoH and the procurement is completely handled by PFSA. The third option is that some essential child commodities, such as zinc tablets, are procured by partners and directly distributed to health facilities through RHBs.

Specific to pneumonia and diarrhea commodities, PFSA is procuring ORS, pulse oximeters and oxygen; but is not procuring zinc and Amox-DT, as there is no request coming from the FMoH as well as HFs. However, if the demand comes from program side, PFSA has the required experience and capacity to handle the procurement process for all essential child commodities in the future.

Pneumonia and Diarrhea Essential Child Commodities Distribution Process

Regarding the procurement process, PFSA mentioned that if a product is procured based on request initiated by the FMoH, the distribution will be performed as per the breakdown given to them by ministry. However, if the commodity is procured by RDF, the facility will procure from PFSA branch either in cash-carry or allocative methods of payment or on credit basis depending on the regions context (in case of Amhara and Oromia, the budget were allocated for each HFs by the region), products listed in the agreement will be delivered to HFs as per the agreement between the two parties. They also mentioned that this procurement process doesn't include Amox-DT and zinc tablets.

PFSA also noted that the agency is solely mandated to manage health commodities to be supplied to all public health facilities but due to several factors, the integration of all commodities is happening in a phased approach and some programs like malaria and vaccine are on the process of transition to the PFSA system. The next step to integrate essential child commodities is to understand lessons learned from the transition in progress (malaria and vaccine program commodities).

Regarding the distribution of iCCM commodities to health posts, PFSA mentioned that previously the iCCM kit was prepared at PFSA central warehouse and distributed to woredas and then the woredas used to deliver kits to respective health posts.

Regarding PFSA's role on medical oxygen quantification, procurement and distribution process, PFSA said that their involvement is mostly on procurement and distribution. However, there are challenges in relation to the management of medical equipment. In response to the challenges, the FMoH has given direction to PFSA to establish a separate directorate that will lead and coordinate, in collaboration with the FMoH and partners. The new medical equipment specification development & utilization directorate established at PFSA level will support specification preparation, installation, training and related issues. PFSA and the ministry believe that the new directorate will improve the overall management of medical equipment at the national level. This should resolve many issues around oxygen as well.

When asked if there is any partner working on co-packing of zinc/ORS in country and what their plan is in the future, PFSA said that at the moment there are co-packed zinc and ORS in private sector but are unsure for public health facilities. According to their view, whenever there is need and guidance from the program side and established demand at public health facility, the agency will act accordingly. Therefore, the FMoH and partners need to develop and implement policy on use, quantification,

procurement distribution system, financing options and recording and reporting of consumptions as well as stock status.

According to the findings from FMHACA respondents, Amox DT and zinc-ORS co-packs are not included in the essential drug list. The respondents also said that to date there are no registered local manufacturers for these two essential child commodities (Amox DT and zinc). For oxygen, there are local manufacturers but they are not registered.

3.2 Quantitative Study Findings

System Overview

Infrastructure and Characteristics

Out of the surveyed facilities, health posts serve 5,595 catchment populations on average while a health center serves 28,077 and hospital has a 1.2M catchment population. 95% of surveyed health posts are providing curative services for under five children, while 100% of the health centers and hospitals provide the U<5 curative service. However, less than half (47%) of health centers have in-patient services.

45% of the health centers have sources of power, with lowest coverage being in Tigray (27%), whereas 95% of hospitals have connected power. Only 40% of the health centers have any form of telephone connection, while 87% of hospitals surveyed have telephone connections. Less than 4% of health centers have internet access.

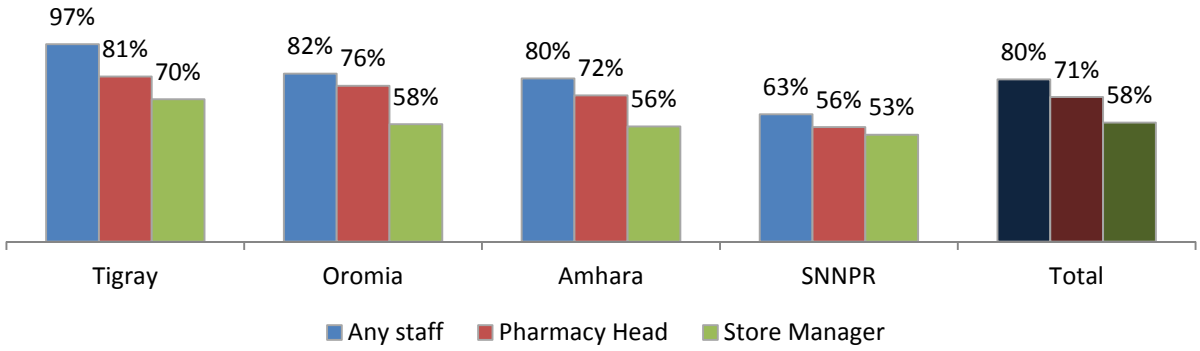
Nearly 90% of health centers and hospitals are charging patients for medicines, both for diarrhea and pneumonia given the financing system is from the health facility Revolving Drug Fund(RDF).

Supply Chain Management System

IPLS is a critical national system, as it ensures regular availability of necessary child health commodities (both new and existing), as well as improving information sharing and decision making on logistics and commodities through LMIS components. IPLS also addresses the distribution system, recording and inventory control systems at all levels. Furthermore, it ensures rational and evidence based supply planning at the PFSA level, which ensures procurement efficiency and cost savings. The baseline findings show that there is a strong correlation between IPLS training at a facility and availability of commodities. Generally, availability of commodities and IPLS indicators in Tigray are the strongest amongst the four regions, and Oromia and SNNPR have both lower availability and lower IPLS indicators, such as training on IPLS, having IPLS forms available, having IPLS forms updated to include diarrheal and pneumonia commodities, etc. as shown in the figures below.

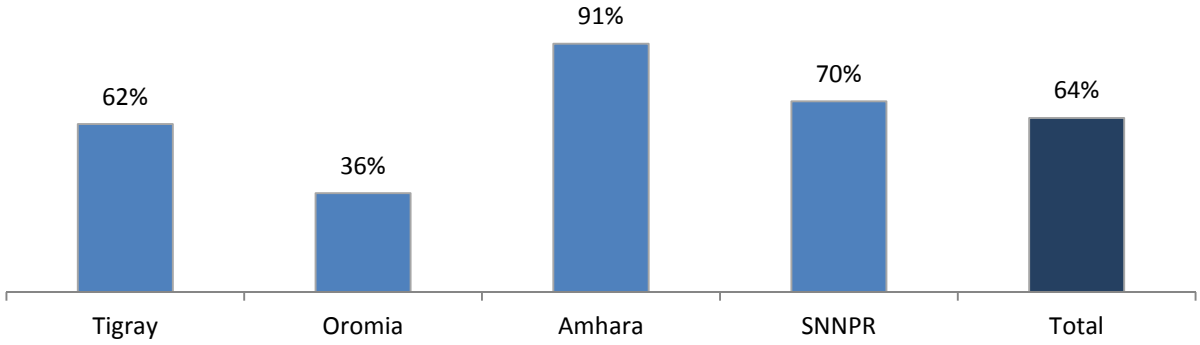
The minimum training requirement for IPLS to start functioning in a given facility is for pharmacy store heads to be trained. As observed in Figure 2 below, store managers are trained less in health centers in Oromia, SNNPR and Amhara, with almost 1/3 of pharmacy heads in health centers are not still trained at national level. With the current high staff turnover, this figure will continue to be low.

Figure 2: Any Pharmacy Professional, Pharmacy Head and Store Manager Trained on IPLS (Health Centers)



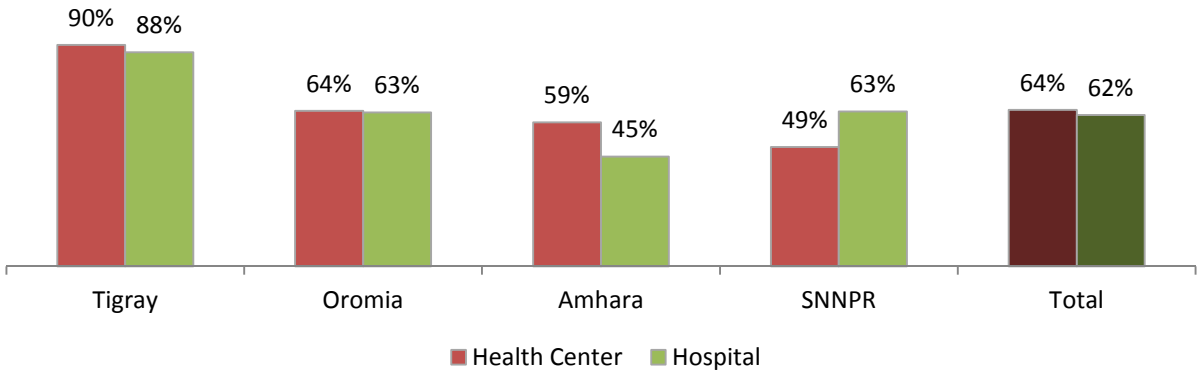
On the other hand, while IPLS sensitization/training of Health Extension Workers (HEWs) is higher in Amhara (shown in Figure 3 below), only 36% and 62% of health posts received any form of IPLS training in Oromia and Tigray respectively. In general, the survey showed that 36% of health posts didn't receive IPLS training. The lower IPLS training of pharmacy and store manager heads at health centers could contribute the low training coverage at the health post level as health centers are supposed to cascade these trainings to the health post level.

Figure 3: HEW Trained on IPLS (Health Posts)



The survey also looked into the availability of IPLS SOPs, which the guiding document for the implementation and is used for quality monitoring, as well as sensitizing the other untrained health care workers. However as shown in Figure 4 below, nearly 40% of the health facilities did not have this SOP during the assessment, with higher availability in Tigray health centers (90%) and lowest in Amhara hospitals (45%) which requires close attention by all stakeholders.

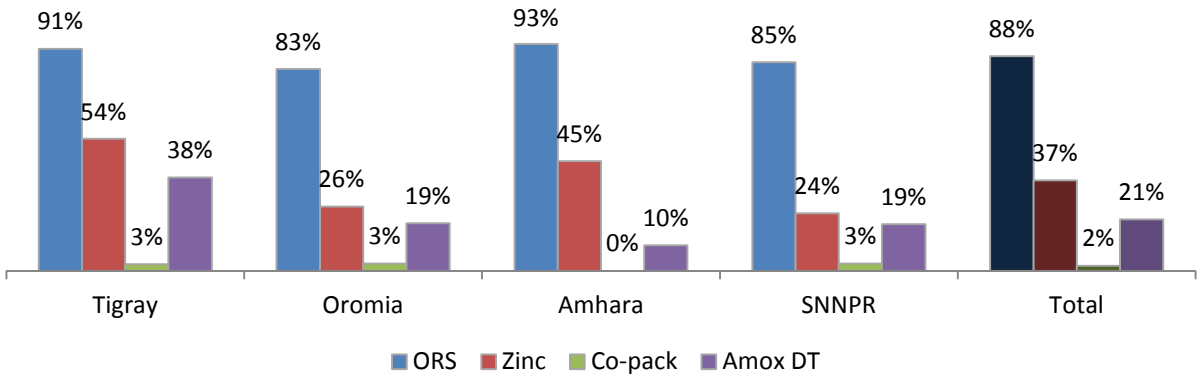
Figure 4: Availability of IPLS SOP (Health Centers and Hospitals)



IFRR and RRF are key components of the LMIS portion of IPLS, and are used for supply and logistics information sharing, as well as resupplying of commodities within facility, and between the facility and PFSA branches. For any commodity to regularly and sustainably be supplied by PFSA system, it should be included in RRF and Health Post Monthly Reporting and Requisition Form (HPMRR) in particular. Otherwise, information related consumption trends and stock levels are not captured and shared, which will affect the regular refilling and procurement system, as well as distribution systems. A significant number of health facilities did not have updated IFRRs and RRFs for Zinc and Amox DT (see Figures 5-7).

The IFRR, which captures information and supplies of commodities between facility pharmacies and different units, has been poorly updated for Zinc (Figure 5 below) in all regions except for Tigray and this is unexpected given that Zinc has been in the system nearly for 3 years now.

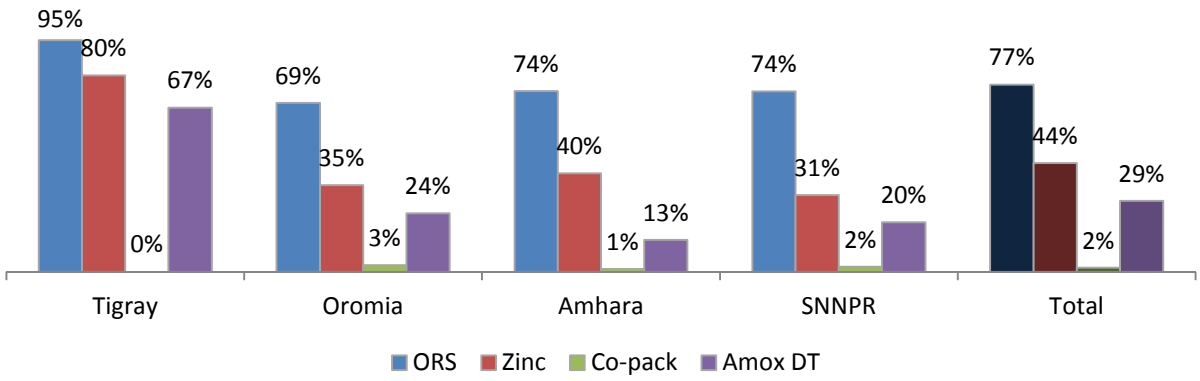
Figure 5: IFRR Forms Updated for ORS, Zinc, and Amox DT (Health Centers and Hospitals)



In Figure 6 below, only 31% and 35% of health facilities are using the RRF that includes zinc in SNNPR and Oromia respectively. Only 13% and 20% of health facilities in Amhara and SNNPR, respectively, have updated RRFs for Amox DT. Generally, 77% of the facilities have updated RRFs for ORS, while it is 44%

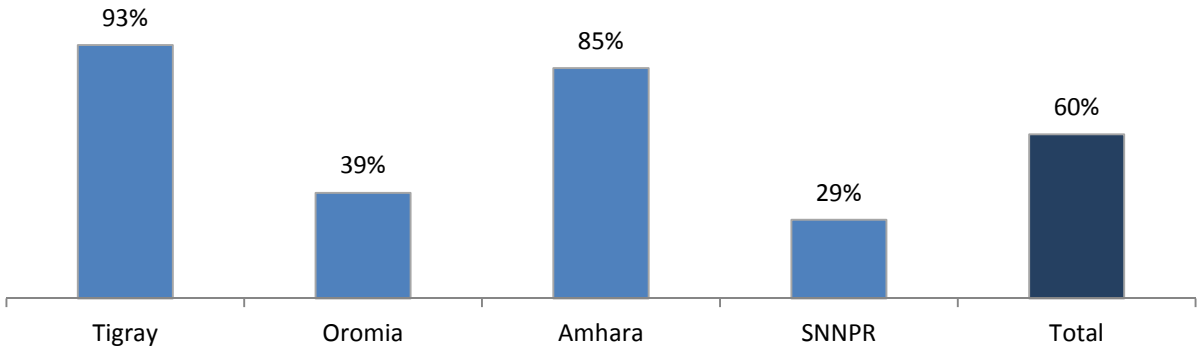
and 29% for zinc and Amox DT respectively. Facilities with updated RRFs that included ORS/Zinc co-pack are only 2%. There is strong linkage of regular availability of commodities and availability of these supply and information formats.

Figure 6: Availability of RRF Updated with ORS and Zinc



The availability of HPMRR, a health post version reporting and resupply tool, is lower in SNNPR (29%) and Oromia (39%), while higher in Amhara and Tigray as shown in Figure 7 below.

Figure 7: Availability of HPMRR Forms (Health Posts)



Appropriate stock levels which should be maintained between maximum and minimum stock level set for health facility can be affected by different factors. In line with sustainable availability of LMIS formats at service delivery points, proper recording and sending the RRF reports and HPMRR on time and regular monitoring of the stock status and timely action have a tremendous impact on the resupply decision and sustainable availability of lifesaving health commodities at service delivery points.

As per the assessment findings and in Table 4 below, about 5% of health centers and hospitals have never sent their RRF for resupply decision and about 4% health centers have sent this later than 90 days; both have a negative impact on resupply decisions.

Table 4: Number of Days Ago when the Facility sent the LMIS Form, by Region and Facility Type

Health Post (HPMRR)	
Never	8%
Within the last 30 days	70%
30-60 days ago	15%
60-90 days ago	3%
More than 90 days ago	2%
Health Center (RRF)	
Never	5%
Within the last 30 days	47%
30-60 days ago	39%
60-90 days ago	4%
More than 90 days ago	4%
Hospital (RRF)	
Never	5%
Within the last 30 days	51%
30-60 days ago	41%
60-90 days ago	3%

The Drug Therapeutics Committee (DTC) is a facility level platform that focuses on rational and cost effective use of child health commodities, addresses demand/utilization issues, financing/budgeting for child commodities at facility level and improving overall supply management including at the health post level.

Based on this survey and as shown in Figure 8, less than 20% of health centers have functional[4] DTC, while 25% hospitals have no functional DTC. Functionality is lower in Amhara where it stands at 7% for health centers and 64% for hospitals. As observed in Figure 9, human resource training is very low; only 7% and 13% of health centers have a facility head and a pharmacy head trained on DTC. These staff members are very important in establishing and rolling out of DTC in a facility. About 17% of the hospitals have a facility head trained on DTC while 33% have pharmacy head trained. This shows a strong need to make DTC functional in order to ensure availability and utilization of essential commodities. From the health center-health post linkage perspective; although current health facility level and structural relationship dictates HCs will provide HPs necessary health commodities as well as technical support via regular supportive supervision, providing short term trainings and targeted mentoring; this survey showed that there is weak linkage between HCs & HPs in which out of 5 health centers (mean of health centers serving health posts), about 2 have been submitting their completed HPRRF between 60-89 days.

[4] Functional is defined as having the following conditions: (1) Availability of the TOR; (2) DTC meetings conducted at least every 2 months; (3) Meeting minutes documented.

Figure 8: DTC Established and Functional

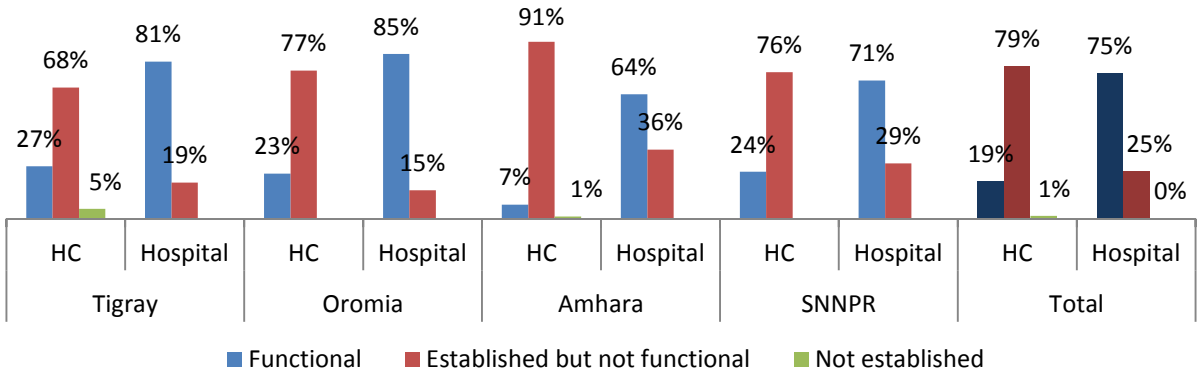
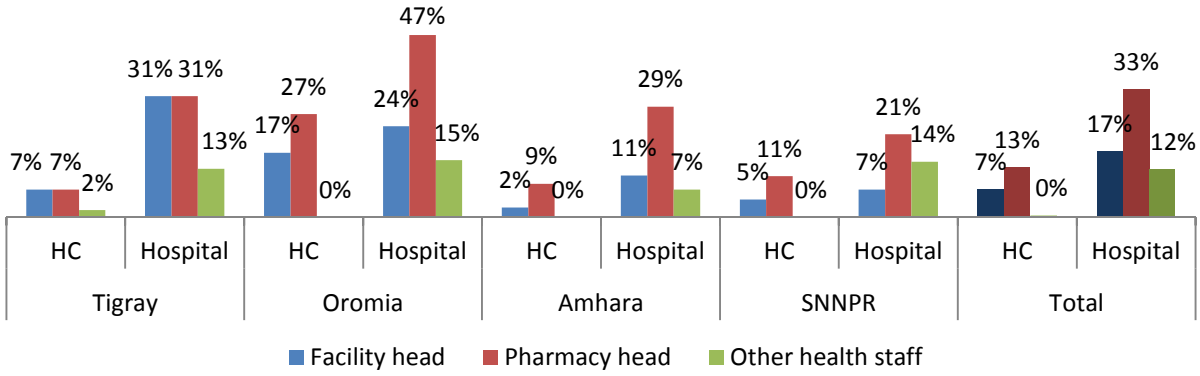


Figure 9: Staff Training on DTC



Availability of Essential Child Commodities

Amoxicillin DT (125mg and 250mg)

Availability of Amox DT in Ethiopia is largely due to distributions in UNICEF-led pilot sites for iCCM (mainly 250mg) and very recently for CBNC (bulk if it is 125mg) where almost all health posts are supposed to receive these commodities. Amox DT is not yet procured by the government (PFSA).

As anticipated, availability of *any* Amox DT was highest at the health post level in all regions; with formulations of Amox DT 125mg relatively higher at health posts. Comparing Amox DT formulations as in Figure 10 below, the 250mg formulation was more available at health post level and this could be linked to the recent round (September-November 2015) of distribution by UNICEF for iCCM. Amox DT 250mg availability is lower in Oromia where only 43% of facilities had it on the day of the survey. The lower availability of 125mg across all regions warrants attention as it can affect CBNC and iCCM implementation. The level of Amox DT 250mg tended to be comparable between health posts and health centers, which showed that distribution direct to health posts in a separate supply chain has not necessarily been occurring. The health centers are supposed to store and supply Amox DT to health posts but the higher availability at health center might show there is a missing link in that reporting and

requisition process. However, the 125mg Amox DT availability is also low at health center level, showing there might not be adequate stock.

Figure 10: Amox DT Availability, Health Posts

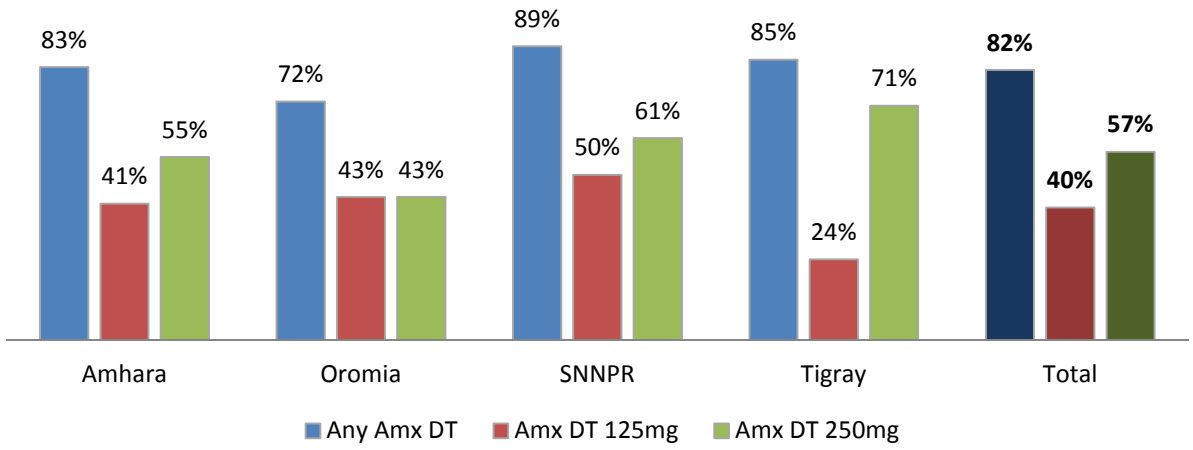
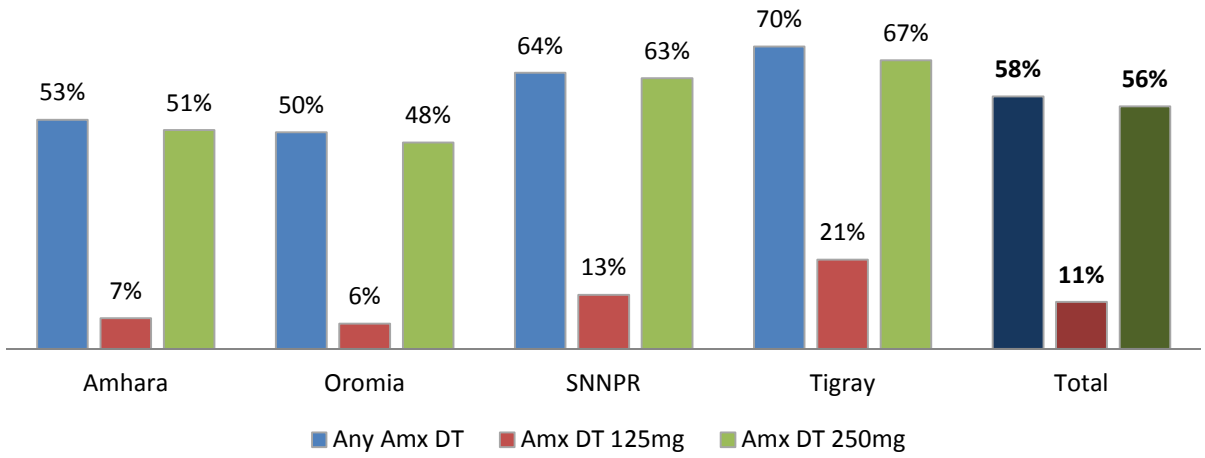


Figure 11: Amox DT Availability, Health Centers



Oxygen Availability

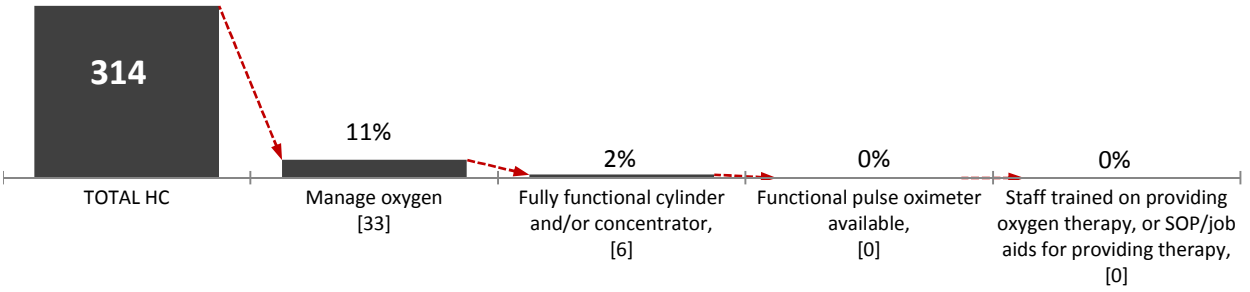
Oxygen availability varied widely across regions, and between facility types (hospitals vs. health centers). Generally, availability was higher at the hospital level. Concentrators appeared to be consistently more functional, although Amhara and Oromia health centers did not have any concentrators available. Knowledge and training on the proper management of oxygen was a critical gap at both the hospital and health center level.

Furthermore, although 83% of health centers and 96% of hospitals are connected to the central electrical supply, over 90% of both HCs and hospitals report having power interruptions of at least two hours in the last week. 45% of HCs and 95% of hospitals have alternative sources of power. HCs rely on a mix of generators and solar while hospitals rely almost entirely on generators; 98% of hospital

generators are functional but only 72% of HC generators are functional. Additionally, hospital generators are either always or often turned on, about 86% of the time when the power goes out, but about 55% of HCs turn on the generator sometimes, rarely, or never when the power goes out. The primary reasons for not turning on the generator when the power goes out relates to fuel and maintenance of the generator.

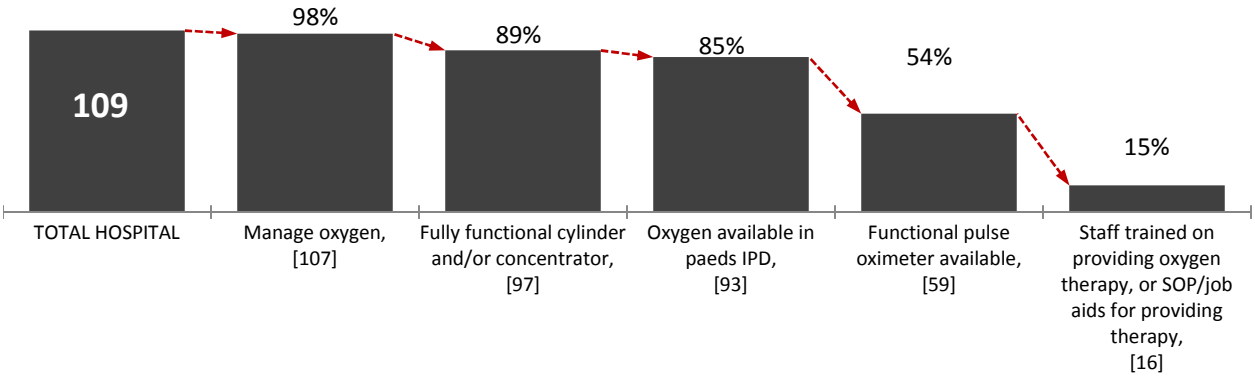
At the health center level, a very small amount of health centers manage oxygen (11%), with even fewer maintaining a functional cylinder or concentrator. Staff members were generally untrained on providing oxygen therapy and health centers lacked SOPs/job aids for providing oxygen therapy (Figure 12 below).

Figure 12: Overall Oxygen Availability, Health Centers



At the hospital level, most hospitals reported that they managed oxygen and had a functional cylinder or concentrator available. However, only 85% had oxygen available in the IPD, and fewer had pulse oximeters available (54%). Finally, only 16 of the 109 hospitals had a staff member who had been trained on providing oxygen therapy or had SOPs/job aids available for providing the therapy (Figure 13).

Figure 13: Overall Oxygen Availability, Hospitals



Furthermore, having an appropriate supply monitoring practice and timely refilling system is critical at the facility level. However, from Table 5 below, only 3% of health centers and 26% of hospitals have

regular practice of oxygen consumption and stock monitoring mechanism, while 9% of health centers and 47% of hospitals think there are enough refilling sources for oxygen, which shows a need to expand supply base for oxygen supply both for health centers and hospitals

While there are no biomedical technicians at the health center level that can perform maintenance on oxygen equipment currently, the relatively higher proportion (41%) at hospitals with this expertise could help involved stakeholders in quick experience of maintenance in remaining hospitals and health centers.

Table 5: Other Key Issues with Current Oxygen Supply System

Issue	Facility	%
Proportion of facilities that have oxygen consumption and stock monitoring mechanism	Health center	3%
	Hospital	26%
Proportion of facilities that have trained biomedical engineers or technicians that can perform oxygen equipment maintenance	Health center	0%
	Hospital	41%
Proportion of facilities that have any SOP or job aid on how to provide oxygen therapy?	Health center	0%
	Hospital	8%
Proportion of facilities that think that there are enough re-filling sources as needed?	Health center	9%
	Hospital	47%
Types of oxygen therapy used at health centers?	Cylinder	7%
	Concentrator	2%
	Plant	0%
Types of oxygen therapy used at hospitals?	Cylinder	90%
	Concentrator	97%
	Plant	2%

Oxygen Availability by Region

Amhara

In Amhara, all 85 **health centers** surveyed reported that they did not have any oxygen concentrators available. A small number of health centers reported that they utilized cylinders (6%), and of these five facilities, four of them had a functional cylinder at the time of the survey. However, none of the health centers had a staff member who had been trained on oxygen therapy. At the **hospital level**, all 29 hospitals had a functional concentrators or cylinders available at the time of the survey. Five of the hospitals (17%) had a staff member trained on providing oxygen therapy.

Oromia

In Oromia, all 86 **health centers** surveyed reported that they did not have any concentrators available. A small number of the health centers reported managing oxygen, with cylinders as their source. Of these, 80% were functional at the time of the visit. However, none of the health centers had a staff member

who had been trained on administering oxygen therapy. All of the **hospitals** in Oromia reported that they managed oxygen, with widespread use of both cylinders (97%) and concentrators (100%). All were reported to be functional at the time of the survey. However, only 15% of hospitals had a staff member who had been trained to provide oxygen therapy.

SNNPR

In SNNPR, although a small number of **health centers** reported that they managed oxygen, a small number had concentrators or cylinders, but functionality of cylinders was limited and staff had not received any training on oxygen therapy. At the **hospital level**, the majority reported that they were responsible for oxygen management, and most had functional concentrators or cylinders. However, only 3 hospitals (10%) had staff members that were trained on providing oxygen therapy.

Tigray

In Tigray, most **health centers** reported that they were not responsible for the management of oxygen (less than 10%), and few had cylinders or concentrators available. Additionally, the equipment was only functional in some of the health centers. Of the 63 health centers surveyed, only one reported that its staff had been trained on providing oxygen therapy. At the **hospital level**, most reported that they were responsible for the management of oxygen and had functional concentrators or cylinders at the time of the visit. However, zero hospitals (of 16) in Tigray had a staff member who had been trained on providing oxygen therapy.

Funding source for oxygen

This assessment also looked into potential source of budget for oxygen supply at health centers and hospitals. However, the assessment showed about 91% of health centers did not have a budget for oxygen supply, which could influence low levels of oxygen availability and functionality. The budgeting for oxygen supply is better at hospital level and about 2/3rds of the oxygen budget is from hospital health care financing.

Pneumonia Diagnostics

Pulse oximetry is an important diagnostic and monitoring tool in the treatment and referral of severe pneumonia cases. The baseline findings show that it is generally unavailable at the health center or health post level; but hospitals appear to have higher levels of pulse oximeter availability, ranging from 73% in Tigray to 93% in Amhara. Pulse oximeters are not included in the national medical equipment procurement list.

The baseline also examined availability of other diagnostic devices, such as clocks, watches, timers and special devices for respiratory rate counting (including counting beads). Special devices for respiratory rate measurement (such as counting beads) were found in small amounts at the health post level, but non-existent at the health center level. Clocks, watches, and timers were more available, but still at 44% overall for health posts and 32% overall for health centers.

Figure 14: Pneumonia Diagnostics, Health Post Level

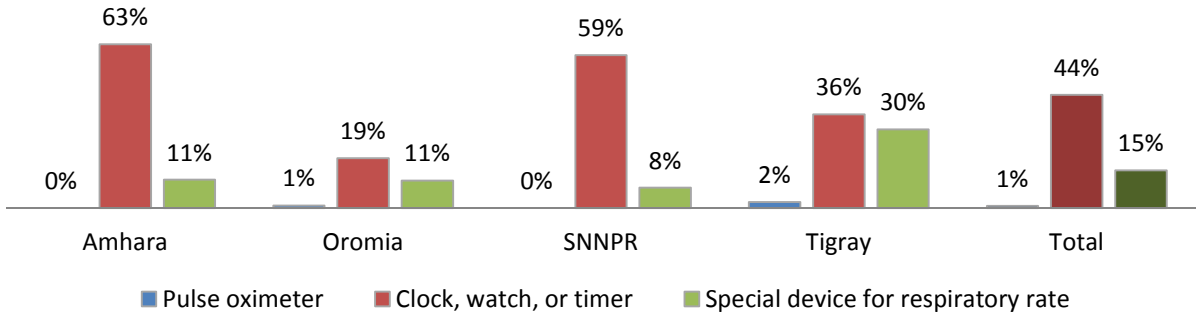


Figure 15: Pneumonia Diagnostics, Health Center Level

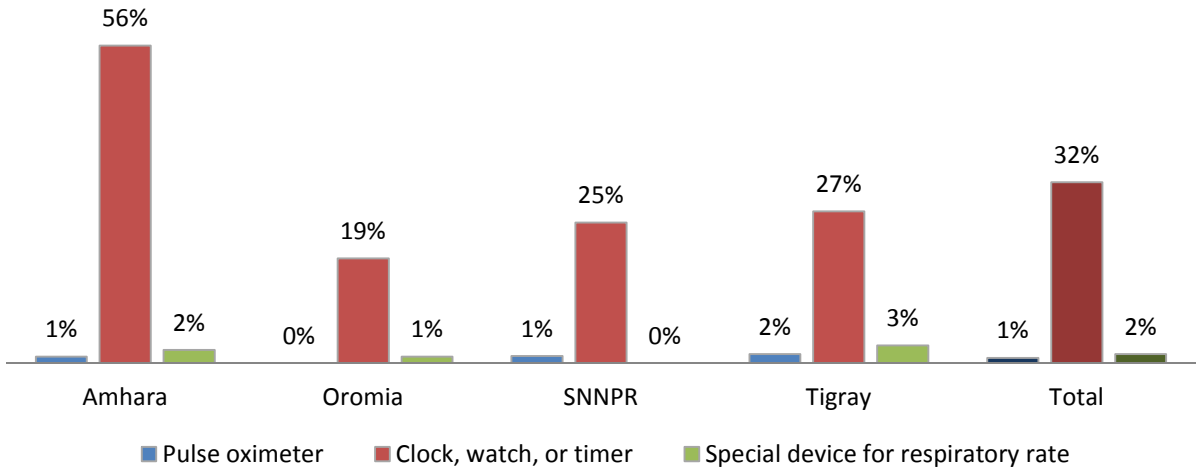
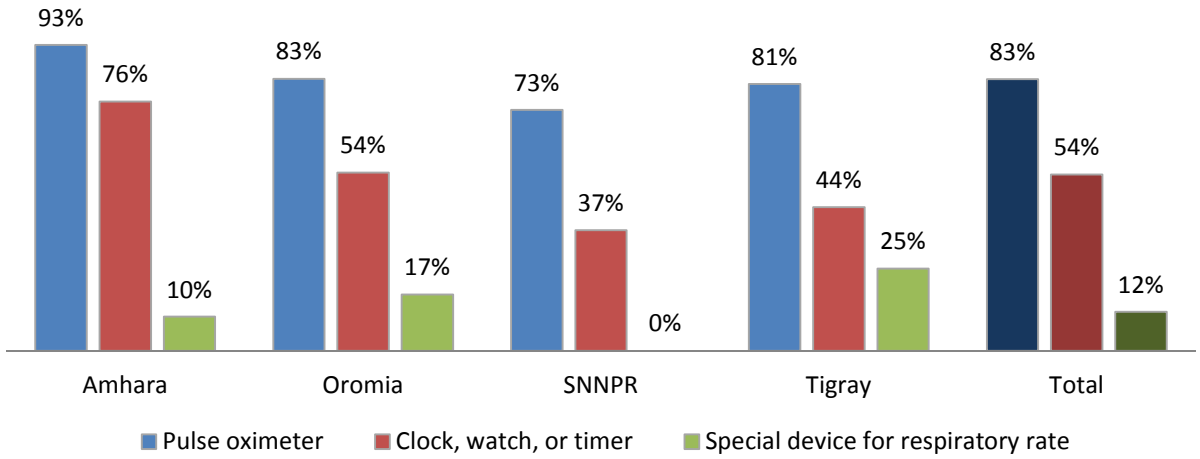


Figure 16: Pneumonia Diagnostics, Hospital Level

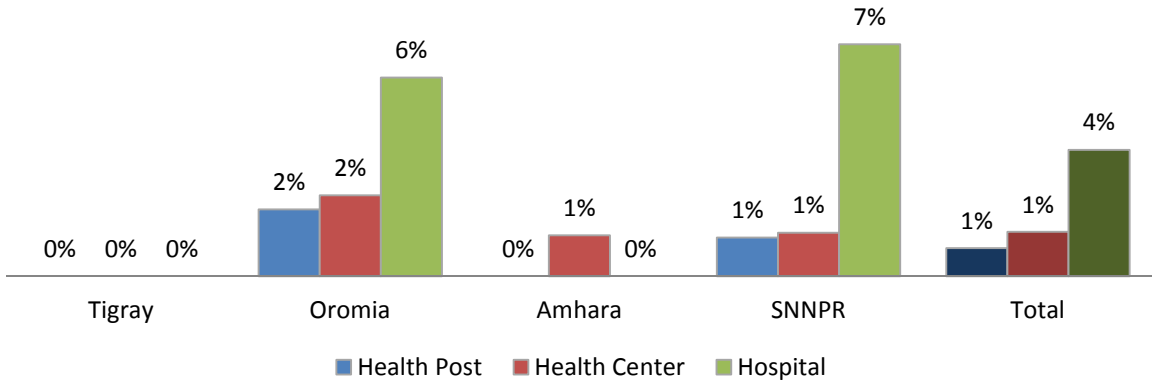


Zinc/ORS Co-pack Availability

While ORS is currently available in Ethiopia; there is insufficient supply of zinc tablets due to inefficient supply chain management. In particular, zinc is not yet included in IPLS and government procurement system.

The baseline found that co-pack availability was generally low in all regions, ranging from 0% in Tigray (all facility levels) to 7% in SNNPR (hospitals only). This was anticipated as the co-pack is generally unavailable in the public sector.

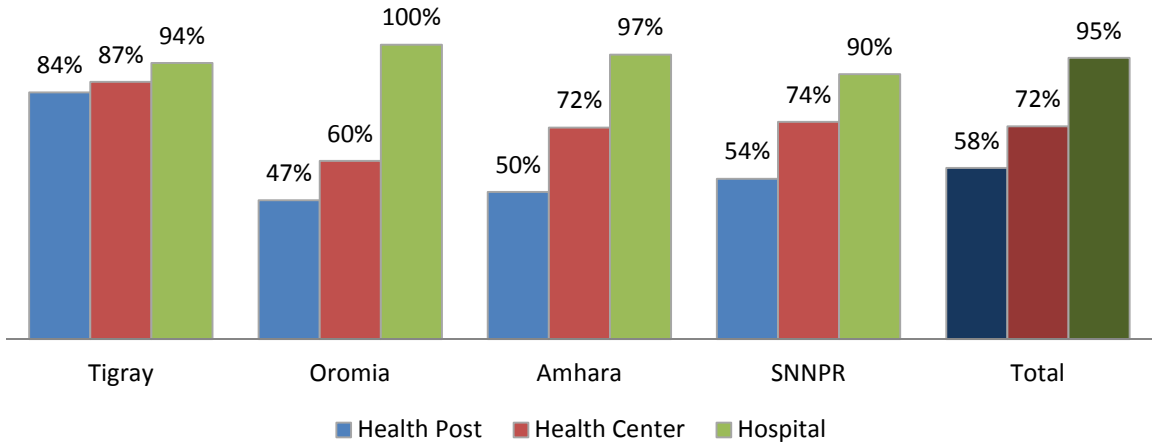
Figure 17: ORS/Zinc Co-pack Availability



ORS Availability

ORS availability was highest at the hospital level, and below 60% at most health posts. Health centers in Tigray had high availability, but availability was less than 75% at health centers in all other regions. Higher levels of stock outs were reported at health posts (13%) and health centers (11%) versus hospitals (3%).

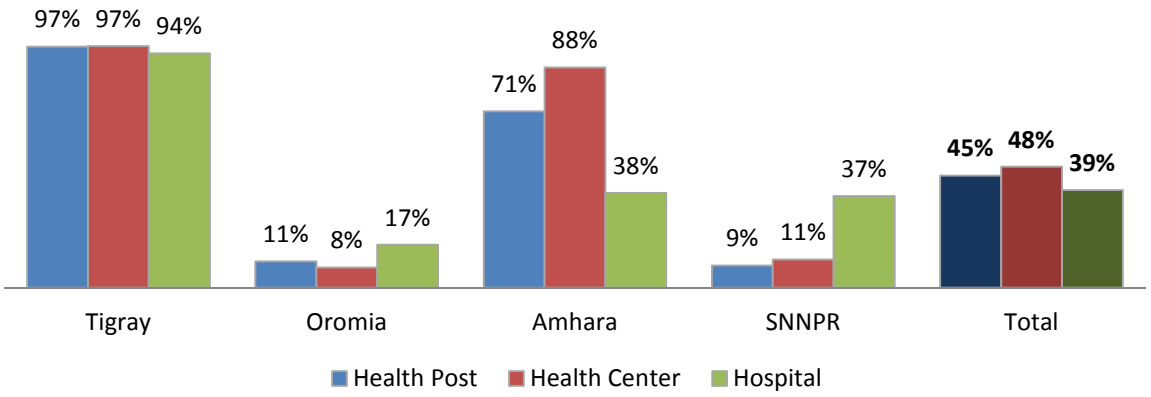
Figure 18: ORS Availability



Zinc Tablet Availability

CHAI conducted a rapid assessment/preliminary survey prior to the start of the program in August 2015 and found that zinc tablets were widely unavailable, and where available had expired prior to July 2015 and availability has historically been between 0-20%[5]. Over Q4 2015, CHAI worked closely with the FMoH and UNICEF to advocate for procurement and rational distribution of zinc. At the time of the baseline, results from these efforts showed a higher level of zinc availability in some regions, although others continue to lag behind. Zinc availability was lowest in Oromia and SNNPR, with average availability at the health post and health center level at less than 10%. Amhara and Tigray showed availability at higher levels (see Figure 19) partly due to the priority and focus from UNICEF to these regions in terms of distribution. Stock outs at health posts and health centers for zinc were higher than at the hospital level (20% vs. 12%).

Figure 19: Zinc Availability



Gentamicin Availability

Gentamicin 20mg/2ml was recently introduced to the program supply and logistics management system to be used for CBNC and implemented by HEWs. The baseline survey looked into the availability and management of this new child health commodity to assist the FMoH and its key partners for informed decision making. Gentamicin 20mg/2ml is available in 72% of health posts whereas 28% of health centers had this product on the day the visit, mainly to refill the health posts. Only 62% of health posts in Oromia had the formulation on the day of the visit, which is lower than the average. There wasn't any Gentamicin 20mg/2ml found in woreda health offices or PFSA hubs on the day of the visit, nor have they ever managed it.

Stock out of Essential Health Commodities in the last 30 days

Zinc-ORS co-pack

The co-pack has not been introduced in public health facilities and has not been included either in standard treatment guidelines or in the essential drug list. Therefore, availability in public health facilities is not expected. Hence, its stock out rate in the past 30 days at health post and health center is

[5] CHAI-PFSA Maternal and Newborn Essential Commodities Assessment Report (200 facilities)

about 67% & 75% respectively. The median number of stock out % more than 30 days at health center and health post was 46% and 31% respectively.

ORS stock out

ORS is one of the lifesaving health commodities expected to available in a sustainable manner at all service delivery points. However, the findings of baseline assessment showed that there are about 13% health posts, 11% health centers and 3% hospitals who experienced stock outs in the past 30 days. As the source of ORS for health facilities, the stock out rate at PFSA branch and woreda health offices is 26% and 17% respectively. The magnitude of the problem is different in regional variation among health facilities, in which Oromia & Tigray regions have been experienced higher stock out rates.

Zinc Tablet stock out

Although it has not been included in the 2014 standard treatment guidelines, zinc is an essential health commodity and has been promoted and supplied in the iCCM kit for a year. In discussion with partners, the stock out at the health posts was expected to be 0%. However, the proportion of health posts and health centers that experienced stock out were 20% and that of hospitals were 12%.

Amox-DT stock out

Amox-DT is an essential health commodity for under 5 children and has been recommended as a first line drug for pneumonia treatment. The proportion of health posts, health centers, hospital and woreda health offices which had experienced stock out of Amox-DT 125mg were 2%, 3%, 17% and 11% respectively. However, the stock out rate for 250mg were 3%, 6%, 0%, 15% respectively.

There was also a stock out of other essential health commodities (other dosage forms of amoxicillin-Amoxicillin 125mg & 250mg suspensions, and cotrimoxazole DT) which were expected to fill the gap of Amox-DT stock outs.

Table 6: Stock Out Rates of Key Commodities

Commodity	Facility	Stock Out Rate
Zinc/ORS Co-Pack	Health Center	75%
	Health Post	67%
ORS	Health Center	11%
	Health Post	13%
	Hospitals	3%
Zinc	Health Center	20%
	Health Post	20%
	Hospitals	12%
Amox-DT 125mg	Health Center	3%
	Health Post	2%
	Hospitals	17%
Amox-DT 250mg	Health Center	6%
	Health Post	3%
	Hospitals	0%

Source of Child Survival Health Commodities

Following implementation of IPLS as a national supply chain system as one channel through PFSA, a number of program health commodities have been integrated and supplied to service delivery points for a number of years. The system has demonstrated a number of advantages which includes establishment of recording and reporting system to communicate decision makers, sustainable availability of adequate stock and in general combating duplication of efforts and resources at different levels (procurement, storage, distribution, etc.).

However, some child survival health commodities were not included in the system and results in frequent stock out or overstock and expiry at different levels. Even if PFSA is still the major source of these health commodities, RHB, ZHDs and woreda health offices are closely working with partners and serve as one channel for distribution of these health commodities.

Zinc/ORS Co-pack Source

As per the baseline assessment findings, about 83% of health posts get their Zinc/ORS co-pack from health centers/hospitals which could be the normal channel if its original source would be PFSA, and about 17% were directly from NGO. The encouraging thing is that about 50% of health centers received from woreda health offices and in which 60% of woreda health offices get supply from PFSA.

ORS Source

ORS has existed on the market for a long time via integration with PFSA channels. Health centers are the major source of ORS (95%) for health posts, while PFSA branches are the main source for health centers (52%), hospitals (90%) and woreda health offices (80%) for the woreda pass through distribution system. The supply through other channels is not significant except that for woreda health offices from NGOs, which is about 8%.

Zinc Tablet source

Similar to that of ORS, 93% cite the source of zinc tablets for health post are health centers while about 82% health centers have received from woreda health offices. 50% of the woreda health offices indicated that they have received zinc tablets from PFSA channels at some point, but the qualitative survey revealed that none of them have received from PFSA channels in the last two years, i.e. 100% are receiving from UNICEF, which indicates a need to work on the integration of this essential health commodity in the IPLS for a sustainable supply system.

Amox-DT and Amoxicillin in suspension source

The major source of both Amox-DT 125mg and 250mg for health posts are health centers, which is about 60% and 82% respectively and supports the HC-HP linkage channel. However, the source for health centers is the woreda health offices in which 88% for Amox-DT 125mg and 84% for that of Amox-DT 250mg. The woreda health offices get more than 90% of its supply for both strengths of these drugs from a non-PFSA channel. Hence, it could be difficult to monitor the stock status and the consumption rate in regular manner.

Amoxicillin suspensions are one of the older formulations in the market and its integration with IPLS system was successful; 74% of health centers, 96% of hospitals and 79% of woreda health offices are

getting this product from PFSA. Similarly, following implementation of health center-health post linkage channel as expected, health centers are the main source of these drug for health posts, which is about 88%.

Proportion of Essential Child Health Commodities Distributed for Free

ORS-Zinc Co-pack

As it is well known, 100% of health posts are getting this drug for free. From assessed sites, about 88% of health centers and 60% of hospitals are getting their products for free which indicates the need to work on fund raising and management ownership at service delivery points.

Proportion of ORS distributed for free

As per the baseline findings, about 69% and 57% of ORS sachets are distributed for free for health centers and hospital respectively. 100% of health posts are distributing for free. Although ORS has been on the market for long period, the budget allocation for its procurement, compared with other RDF drugs, is not satisfactory.

Zinc Tablet distribution for free

As a newly introduced essential health commodity, zinc tablets have been distributed at all levels for free, i.e. 98% for health centers, 82% for hospitals and 100% for health posts. This information is also supported with the fact that all PFSA branches get this medication for free (100%).

Amox-DT distribution

The finding also clearly showed a high percentage of both strengths of Amox-DT has been supplied for free to health centers and hospitals. The supply for Amox-DT 125mg is 100% free for both health centers and hospitals and it is also 98% (HC) and 86% (hospitals) free for Amox-DT 250mg.

Amoxicillin suspension and Cotrimoxazole DT distribution status for free

Similar to that of Amox-DT, a high percentage of Cotrimoxazole-DT tablets have been distributed for free both at health centers (98%) and hospitals (100%). This evidence has also been supported with the fact that PFSA is also received this health commodity for free. However, a low percentage of both strengths of Amoxicillin suspensions (125mg & 250mg) have been distributed for free, i.e. 27% at health center and 29% at hospital for Amoxicillin 125mg and similarly it is 16% at health centers and 21% at hospitals for Amoxicillin 250mg suspension.

Even if essential health commodities like Cotrimoxazole DT have been introduced in the country, its integration with the national SCM system, as well as funding for this drug, is not as satisfactory. Hence there is a need to work hand in hand on budget allocation/management ownership with introduction of essential health commodities.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

- The FMoH adopted the 2014 WHO recommendation on childhood diarrhea and pneumonia management (as least on the use of zinc, ORS & Amox DT) and included it in the current IMNCI as well as iCCM guidelines and training materials. However, guidelines are not printed and reached to all public health facilities and health posts level to facilitate policy implementation.
- The assessment found that there is no national level government agency or partner working to introduce/scale up Zinc/ORS co-packing and distribute it in to public facilities all regions at this moment. Additionally, none of the regions had any idea about the Zinc/ORS co-packing initiative and were unaware of any partner working in their respective regions at this moment.
- The recently revised IMNCI guideline (2015 version) recommend pulse oximeter use as important pneumonia diagnosis and treatment monitoring equipment at health center & hospital level. However, regional respondents said that they are not aware of this update and they are unsure as to how the regions are going to procure, distribute and monitor its implementation.
- The assessment found that currently there is no policy or guideline on medical oxygen use and supply system in Ethiopia. It was also found that the current oxygen supply system including the transportation system is not systematic, is irregular, ineffective and not cost effective.
- All assessment respondents mentioned that there is a clear resource gap and most of the oxygen activities at the moment are dependent on partner support and do not seem to be sustainable.
- The assessment found that pneumonia and diarrhea essential child commodities (Amox DT, Zinc tablet and ORS) are recently included in the reporting and requisition format but the updated versions are not being distributed and used at facility level. Additionally, the quantification and procurement process of Zinc and Amox DT are not being done by central PFSA. The distribution system is also being done through the RHBs.
- The assessment found that IPLS related issues such as training on IPLS, availability of IPLS formats, and having IPLS forms updated to include diarrheal and pneumonia commodities are relatively lower. There is a significant variation of IPLS implementation among regions and facility types.
- The mean number of health posts submitting their complete HPMRRF on time is low compared to the mean number of health centers serving them, which indicates that there is a need to work extensively on strengthening the HC-HP linkage with respect to SCM.
- In this study, very few health centers and hospitals had functional DTC across the four regions. Moreover, the facility head and pharmacy head DTC training coverage is very low.

- In general, oxygen availability seems lower and highly variable across regions, and between facility types (hospitals vs. health centers). Generally, availability was much higher at the hospital level and lower at health center level. However, staff members were generally untrained on providing oxygen therapy and facilities lacked SOPs/job aids for providing oxygen therapy.
- Co-pack availability was generally low across all regions and facility types.
- ORS availability was higher at the hospital level, and relatively low at most health posts and health centers.
- Zinc availability was highly variable between regions and facility types. Zinc availability was lower in Oromia and SNNPR, while it was higher in Amhara and Tigray regions. Zinc tablet stock outs at health posts and health centers were higher than at the hospital level.
- The source for many essential child health commodities is non-PFSA channels, which could be difficult to track its stock status and make refill decision on time.
- Almost all essential health commodities used for pneumonia and diarrhea treatments have been distributed for free mainly by NGO partners. Hence, there is a need to work on budget allocation and management ownership at service delivery point/RHB.

4.2 Recommendations

Policy Level Recommendations

- It is encouraging that the FMoH adopted the 2014 WHO recommendation on childhood diarrhea and pneumonia management. However, guidelines, job aids and other necessary tools need to be printed and distributed to all public health facilities and health posts, along with orientation, to speed up policy implementation by the FMoH/RHBs and partners.
- According to this assessment, the introduction or scale up of zinc/ORS co-packing is lagging behind despite its comparative benefit. None of the regions were aware of the zinc/ORS co-packing initiative. Hence, the FMoH, PFSA and partners, such as CHAI, along with RHBs, need to revitalize the issue and work to introduce and scale up Zinc/ORS co-packing in Ethiopia, through analyzing the in-country experience from the private sector.
- The FMoH and partners such as CHAI need to update regions and health facility staff on the use of pulse oximeters as an important pneumonia diagnostic and treatment monitoring tool, so that they plan how much to procure and distribute, as well as monitor its implementation at the appropriate level of care.
- The FMoH needs to develop a clear medical oxygen policy and implementation guideline with clear roles and responsibilities of stakeholders at all levels, including choice of types of oxygen equipment, where to place what kind of arrangements, quantification, procurement and distribution mechanisms, as well as information flow.
- The FMoH and RHBs need to find a sustainable way of financing oxygen procurement and related activities, as it is highly dependent on partner support at this moment. The policy needs to give clear direction and indications on financing options, which includes use of health care financing money or RDF depending on the local context.

- The quantification and procurement process for Zinc and Amox DT is being done by programs/partners. The distribution is also being done through the RHBs. PFSA, in collaboration with its partners, needs to take over the quantification, procurement and distribution system so that the national supply chain management system capacity is built and over/under stock and expiry are minimized.
- There is a lack of regular and low frequency of supportive supervision for timely corrective action at service delivery points. Hence, the RHB and PFSA, with partners, are required to plan for JISS (joint integrated support supervision) and review forms.

Recommendations on Supply Chain System

- The assessment found that IPLS indicators, such as training on IPLS, IPLS formats availability and having IPLS forms updated to include diarrheal and pneumonia commodities are relatively low. There is a significant variation of IPLS indicators between regions and facility types. Hence, the FMoH, PFSA and CHAI need to implement IPLS interventions, such as IPLS training, distributing revised IPLS SOPS and forms, and conducting regular supportive supervision in the regions. The existing variations need to be taken in to account when interventions are planned.
- There are different versions of IPLS formats at health facilities which results in missing the reporting and requesting of lifesaving health commodities. Hence, there is a need to establish system for updating, printing, storage and distribution of LMIS formats in which it couldn't be separated from the supply of essential pharmaceuticals.
- As shown in the study, even if IPLS training has been provided for a number of years, the number of trained professional at moment is low. Hence, PFSA, RHB and partners should intensively work on strategies like retention mechanism, skill & knowledge transfer mechanism and database/system at different levels for easy tracking training gaps and addressing this issue.
- DTC training coverage is very low among facility pharmacy heads. As a result, most of the facilities didn't have a functional DTC committee. Hence, to impact essential commodities availability and utilization, PFSA and partners such as CHAI need to revise the current ToR of DTC, give training on DTC and conduct follow up site visits to ensure that DTC are functional and working to expectations.

Recommendations on Essential Child Commodity Availability

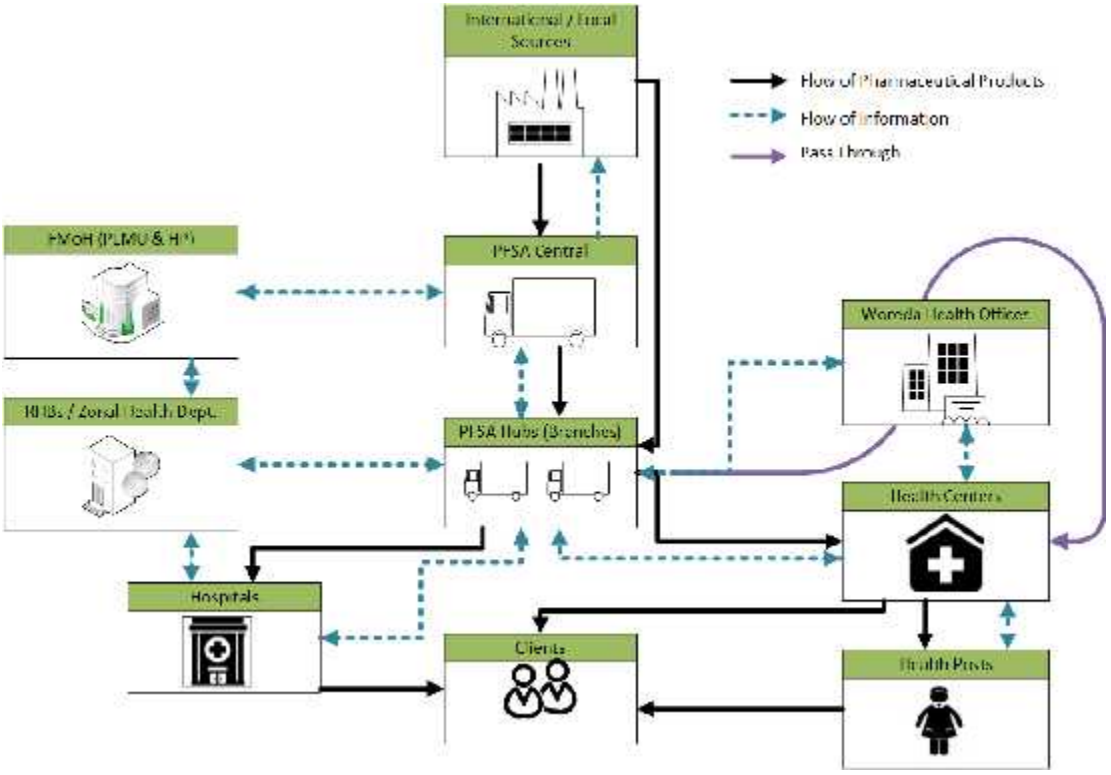
- In general, oxygen availability seems lower and highly variable across regions, and between facility types (hospitals vs. health centers). Staff members were generally untrained on providing oxygen therapy and facilities lacked SOPs/job aids for providing oxygen therapy. Therefore, the FMoH and partners need to develop and implement a policy on medical oxygen use, quantification, procurement distribution system, financing options and recording and reporting of consumptions as well as stock status.
- Co-pack availability was generally low across all regions and facility types. Hence, the FMoH, PFSA and partners such as CHAI need to work together and find a way to avail the Zinc/ORS

co-pack in public sector so that diarrhea management will be improved and ultimately save lives.

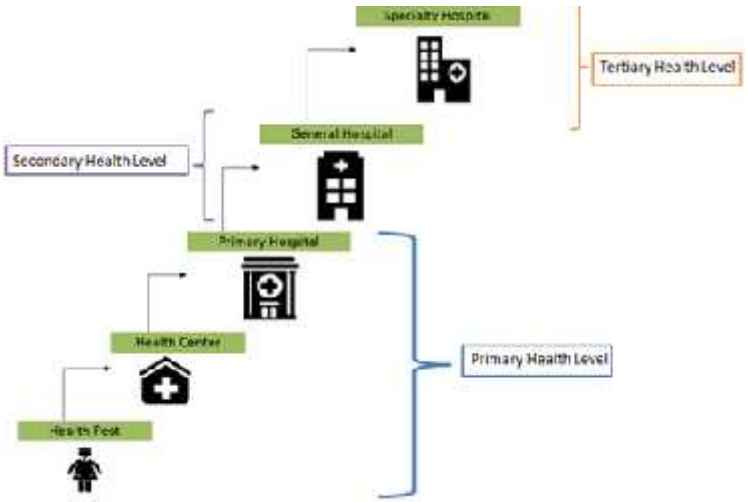
- ORS availability was higher at the hospital level, and relatively lower at most health posts and health centers. Hence, the distribution system at health posts and health centers need to be assessed and will need to act accordingly to improve availability at PHCU level, where most of the need exists.
- Zinc availability was highly variable between regions and facility types. Zinc availability was lower in Oromia and SNNPR, while it was higher in Amhara and Tigray regions. Zinc tablet stock outs at health posts and health centers were higher than at the hospital level. Hence, the zinc distribution needs to be adjusted as soon as possible in the regions and facility types with lower availability as a short term measure and improve the distribution system (integrating in to IPLS system) to impact availability in the long run.
- Since majority of the essential child health commodities have been distributed for free and the integration with sustainable funding/budget allocation is not satisfactory, FMOH and PFSA with partners will need to work through this.
- The stock out rate for these essential health commodities including ORS (one of the older lifesaving drugs in the market) is high at different levels & especially at health posts where the alternative of treatment is limited. Hence, there is a need to strengthen the existing national supply chain management system from both administrative and supplier side with enforcement of health facilities' regular stock management.

5. APPENDICES

Appendix A: Flow of Pharmaceuticals and Information in IPLS



Appendix B: Ethiopia Health System Structure and Patient Flow



Appendix C: PFSA Hubs Supplying Program Regions

PFSA Hub	Provides pharmaceutical supplies to: Amhara	Oromia	SNNPR	Tigray
Addis Ababa	Yes	Yes	Yes	No
Adama	Yes	Yes	No	No
Bahir Dar	Yes	No	No	No
Dessie	Yes	No	No	No
Dire Dawa	No	Yes	No	No
Gondar	Yes	No	No	No
Hawassa	No	Yes	Yes	No
Jimma	No	Yes	Yes	No
Mekelle	No	No	No	Yes
Nekempt	No	Yes	No	No
Negelle Borena	No	Yes	No	No
Shire	No	No	No	Yes
Total hubs supplying facilities in the region	5	7	3	2

Appendix D: List of KII Participant Organizations

1. FMoH
2. PFSA
3. FMHCA
4. Oromia RHB
5. Tigray RHB
6. USAID/SIAPS/MSH
7. USAID/SCMS/MSH
8. USAID/Deliver/JSI
9. L10K/JSI
10. PATH