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Evaluation of the Integrated Community Case Management Strategy in Rwanda Report

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The Maternal and Child Survival Program (MCSP) is a global, $560 million, 5-year cooperative agreement funded by the United States Agency for International Development (USAID) to introduce and support scale-up of high-impact health interventions among USAID's 25 maternal and child health priority countries,* as well as other countries. The program is focused on ensuring that all women, newborns and children most in need have equitable access to quality health care services to save lives. MCSP supports programming in maternal, newborn and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment.

* USAID's 25 high-priority countries are Afghanistan, Bangladesh, Burma, Democratic Republic of the Congo, Ethiopia, Ghana, Haiti, India, Indonesia, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Nigeria, Pakistan, Rwanda, Senegal, South Sudan, Tanzania, Uganda, Yemen and Zambia.

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Abbreviations

ACT	Artemisinin-based combination therapy
AQ/SP	Amodiaquine/Sulfadoxine-Pyrimethamine
ARI	Acute Respiratory Infection
CCM	Community Case Management
CHW	Community Health Worker
C-IMCI	Community-Integrated Management of Childhood Illnesses
DHS	Demographic and Health Survey
DH	District Hospital
DP	District Pharmacy
EPI	Expanded Program on Immunization (EPI)
FGD	Focus Group Discussion
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
HBM	Home-based management of fever
HC	Health Center
iCCM	Integrated Community Case Management
IMCI	Integrated Management of Childhood Illnesses
Mal&OPDD	Malaria and Other Parasitic Diseases Division
MCH	Mother and Child Health
MCCH	Maternal, Child and Community Health
MCSP	Maternal and Child Survival Program
M&E	Monitoring and Evaluation
MPDD	Medical Procurement and Distribution Division
MRC	Medical Research Center
MUAC	Mid-upper arm circumference
NGO	Non-Government Organization
NMCP	National Malaria Control Program
PBF	Performance Based Financing
PME	Planning Monitoring and Evaluation Division
PMI	Presidential Malaria Initiative
RBC	Rwanda Biomedical Center
RDT	Rapid Diagnostic Test
RHCC	Rwanda Health Communication Center
RHMIS	Rwanda Health Management Information System
SIS Com	Système d'Information Sanitaire Communautaire
TC	Technical Committee
TWG	Technical Working Group
WHO	World Health Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Developmen

I. SUMMARY

This evaluation has been designed to provide data on the integrated community case management (iCCM) strategy in eight districts in Rwanda. This evaluation focused on successes and challenges of iCCM strategies in order to know where to reinforce and empower community health interventions. The evaluation was implemented by the Ministry of Health through the Maternal, Child and Community Health Division (MCCH) and Malaria and Other Parasitic Diseases Division (Mal&OPDD) of the Rwanda Biomedical Center (RBC) in partnership with the USAID/Maternal and Child Survival Program (MCSP) in the second semester of 2017.

This evaluation helped to assess the performance of the CHWs and the quality of care provided by CHWs to children under five years with malaria, diarrhea, and pneumonia. It follows a series of external evaluations of the Home-Based Management of Malaria strategy.

The evaluation intended to assess the work of various groups from the community by gathering information from community health workers, in charge of community health, health facility authorities towards Integrated Community Case Management, etc.

Because data collection for this activity was focused on the iCCM strategy itself, this study received a non-human subjects research determination from the Johns Hopkins School of Public Health's IRB and Rwanda National Ethics committee. As such, recruitment and informed consent procedures are not described in this study report .

II. INTRODUCTION

iCCM is a proven evidence-based strategy that trains, equips and supports various cadres of community health providers to deliver high-impact treatment interventions in the community. It is an important component of Integrated Management of Childhood Illness (IMCI), which was developed by WHO in the 1990s.[1] It builds upon progress made and lessons learnt in the implementation of community IMCI and aims to augment health facility based case management. Between 2008 and 2011, Rwanda introduced iCCM of childhood illness nationwide. Community health workers (CHWs) in each of Rwanda's nearly 15,000 villages were trained in iCCM and equipped for empirical diagnosis and treatment of pneumonia, diarrhea, and malaria; for malnutrition surveillance; and for comprehensive reporting and referral services.[2]

Malaria

From 1994 to 2009, malaria was the primary cause of mortality in Rwanda and is still the primary cause of mortality in East Africa region, and ranked sixth among causes of mortality in Rwanda in

1 CORE GROUP (2010). Community case management essentials-Treating common childhood illnesses in the community. A guide for program managers.
2 http://www.ghspjournal.org/content/2/3/328.full

2011. From 2012 through 2015, the annual number of malaria cases increased four-fold (to a total of 1,957,402 cases in 2015).[3] The under-five mortality burden from malaria is still among the greatest in Africa. The 2014-2015 Rwanda Demographic and Health Survey (DHS) estimated that, per 1,000 live births, 50 children die before they reach the age of five (decline from 76 per 1,000 live births in 2010). Having malaria treatment available near the home is a major strategy for reducing under five mortality in Rwanda.

Artemisinin-based combination therapy (ACT) was officially adopted to treat children under five at the community level in 2007 to replace amodiaquine plus sulfadoxine-pyrimethamine (AQ+SP) and the use of rapid diagnostic tests (RDTs) by CHWs to diagnose malaria prior to administering treatment was introduced at the community level.

Diarrhea

Diarrheal disease is the second leading cause of death in children under five, and is responsible for killing around 760,000 children every year around the world. Diarrhea can last several days and can leave the body without water and salts that are necessary for survival.[4] In Rwanda, 2014-2015 DHS data show that 12 percent of Rwandan children under five had diarrhea in the two weeks preceding the survey.[5] The rate was highest among children 12-23 months (22 percent) and 6-11 months (18 percent). In 2015, forty-four percent of children with diarrhea were taken to a health facility or provider compared to thirty seven percent in previous survey. However, 27 percent of children with diarrhea still received no treatment at all. Children with diarrhea should be rehydrated by drinking more fluids, particularly oral rehydration solution (ORS) and should be given Zinc Sulfate. These life-saving WHO-recommended treatments can be given by CHWs.

Acute respiratory infections (ARIs), including Pneumonia

Pneumonia is the single largest cause of death in children worldwide. Every year, pneumonia kills an estimated 1.6 million children under five, accounting for 18% of all deaths of children under five worldwide.[6] Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa. Children can be protected from pneumonia with well-known interventions including pneumococcal vaccine (which is in the national Expanded Program on Immunization (EPI) in Rwanda) and early treatment with low-cost, low-tech medication and care.

Pneumonia can be spread in a number of ways. The viruses and bacteria that are commonly found in a child's nose or throat can infect the lungs if they are inhaled. They may also spread via air-borne droplets from a cough or sneeze. In addition, pneumonia may spread through blood,

3 2015 Malaria Annual report, Mal&OPDD/RBC

4 http://www.who.int/mediacentre/factsheets/fs330/en/

5 National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda], and ICF International. 2015. Rwanda Demographic and Health Survey 2014-15. Rockville, Maryland, USA: NISR, MOH, and ICF International.

6 Black RE, Cousens S, Johnson HL, Lawn JE, Rudan I, et al. (2010) Global, regional, and national causes of child mortality in 2008: a systematic analysis. Lancet 375: 1969–1987.

especially during and shortly after birth. Most cases of pneumonia require antibiotics, which are often prescribed at a health center. Simple pneumonia cases can also be diagnosed and treated with inexpensive antibiotics at community level by trained CHWs, while severe cases should be referred to hospital for more advanced management. The protocol for treating simple pneumonia in Rwanda is Amoxicillin 125mg dispersible tablets.

Development of the iCCM Strategy

The Home Base Management (HBM) of Malaria strategy which led to iCCM has been implemented in Rwanda since 2004. The strategy's main goal was to control malaria by increasing the percentage of children under five who receive the correct treatment within 24 hours of the onset of symptoms of malaria. AQ+SP was used by CHWs to treat malaria at the community level between 2004 and 2006.

In 2006, an external evaluation of the HBM strategy resulted in a strongly positive recommendation to extend the strategy countrywide.[7] The same year, Artemether-Lumefantrine (ACTs) replaced the AQ+SP as the drug to be used in the management of simple malaria cases at health facility level. In 2007, this extended to cases in children under five.

The use of ACT at the community level is facilitated by the usage of a special blister package branded PRIMO. The PRIMO blister packages have pictorial and written instructions in Kinyarwanda and are available in two colors: red for the age group between 6 to 35 months and yellow for the age group between 3 to 5 years. Both are used by CHWs to facilitate dispensing and to improve adherence to malaria treatment.

In 2008, the Ministry of Health disseminated the National Community Health Policy in which malaria case management was integrated in the CHW package of activities. In each village (Umudugudu), Binomes (pairs of CHWs) are trained in iCCM and they are responsible for administering appropriate treatment for simple cases of malaria, diarrhea and pneumonia. In addition, the binomes are trained to provide first aid as quickly as possible and refer severe cases to health facilities. Another cadre of CHWs called ASMs (Agents de Santé Maternelle) are providing basic maternal and reproductive health services. In 2010, the Rwanda NMCP introduced the use of malaria RDTs at the community level with the goal of treating only confirmed malaria cases, as is the case for health facilities.

[7] Integrated National Malaria Control Program (2007). External Evaluation Of The Pilot Phase Of The Home-Based Management Of Malaria Program In Rwanda -- Final Report by Lawrence Barat and Joan Schubert [USAID/BASICS], Jane Briggs and Katie Senauer [USAID/RPM] , Daniel Ngamije, Corine Karema, François Niyitegeka, Epiphanie Nyiraharerimana, and Aline Uwimana [INMCP]

[7] Franco, Ciro et al. 2008. Evaluation of the Home Based Management of Malaria Strategy in Rwanda: 2008. Arlington, Va., USA: Basic Support for Institutionalizing Child Survival (BASICS) and Strengthening Pharmaceutical Systems (SPS) for the United States Agency for International Development (USAID).

Current iCCM strategy

This strategy is carried out by CHWs, who are volunteers elected by their communities, and who do not receive financial compensation. CHWs living in the catchment area of one health center (HC) are grouped in a cooperative where they undertake income generating activities. Those cooperatives also benefit from complementary financial support from the MOH through performance based financing (PBF) funds and other partner interventions. By 2011, an army of more than 29,000 binomes were available across the 14,837 villages in Rwanda, with a ratio of approximately one CHW for every 50 children under 5 in the population.[8] In order to address an alarming increase in reported malaria cases (as high as seven-fold increase in the year period, from 2011 to 2014), the MOH decided to add the diagnosis and treatment of malaria cases in adults to the package of services provided by the CHW binomes in early 2016.[9] As the inclusion of diagnosis and treatment for adults is relatively new to the program, this study will assess iCCM as implemented for diagnosis and treatment of children under five only.

To promote the sustainability of iCCM, medicines are provided free through donors to HCs and sold for 200 Rwandan Francs (Frws) for community health insurance members and 500 Frws for the non-members. The funds are gathered by the health center and kept in the cooperative bank account.

Organization of iCCM

The iCCM strategy was developed and honed by a technical working group (TWG) involving key stakeholders at the central level. At the district hospital (DH) and HC level, the structure is as follows: there is a group of M&E staff at the DH level (M&E Officer and the in-charge of community health activities) and at least two staff members per HC who have been trained as trainers of iCCM.

To promote better data management systems, standardized iCCM data collection forms were deployed at all levels, including forms for reporting consumption of medicines, number of treated cases, number of referrals and funds collected. Each month, the binomes compile their monthly reports at the village level; then compiled reports are sent to the cell level which is composed of 4 to 8 villages, where another compilation is done; and finally each cell sends the report to the head of cooperative where a final compilation is done to be included in the HC monthly report (SISCom report).

To strengthen the reporting system, community PBF and verification/reporting tools have been adapted and adopted to suit the community level interventions. A national web-based database (RHMIS) was developed aimed at improving management and analysis of CHW reports.

[8] Mugeni C, Levine AC, Munyaneza RM, Mulindahabi E, Cockrell HC, Glavis-Bloom J, et al. Nationwide implementation of integrated community case management of childhood illness in Rwanda. Glob Health Sci Pract. 2014; 2(3):328-341. http://dx.doi.org/10.9745/GHSP-D-14-00080.

[9] President's Malaria Initiative (2016). Rwanda Malaria Operational Plan FY 2016

A multi-level supervision plan was developed where district hospitals are supervised by the national level, health centers by districts hospitals staffs and CHWs by health centers. In addition, monthly meetings of CHWs are held at the health center level that included data quality audit, drug management and cooperative activities on the agenda.

For the management of malaria cases at community level, a special focus is that all malaria cases are treated after being confirmed using RDT and this is implemented countrywide. This is very important strategy in the malaria control phase because only malaria cases are treated and followed up. The diagnostic test currently used by CHWs is the Malaria SD Bioline.

The supply chain of medicines and mRDTs is managed through a "pull" system, whereby RDTs are supplied to CHWs each month based on the consumption report, HCs to the District Pharmacy (DP) and DP to the central stores (MPPD/RBC).

I. STATEMENT OF THE PROBLEM

An evaluation of CHW's performance in 2009 raised some key issues.[10] By analyzing 946 cases recorded by 95 CHWs in 4 districts (Ruhango, Gisagara, Nyamagabe and Kirehe), the authors concluded that, in all areas covered by the evaluation, the observed CHWs were not correctly completing the individual forms. However, CHW decision-making and the dosage of medication administered were generally appropriate when the symptoms were recorded. These findings called into question the reliability of the data reported through the iCCM monitoring system. Direct observations during the same assessment had shown competency gaps in respiratory count (as low as 42% in one district), recognition of dehydration signs (less than 60% overall), and utilization of mid-upper arm circumference (MUAC, as low as 17% in one district). The report also showed that the skill level of CHWs differed greatly from one district to another.

In 2012, through an effort to sharpen the refresher training on iCCM in its five supported districts (Ruhango, Gasabo, Kicukiro, Nyarugenge and Nyamagabe), the MCHIP-Ikiraro project performed individual assessment with direct observation of a total of 3,011 CHWs. Internal reports shared with USAID and with the MOH confirmed that CHWs' skills greatly vary between individual CHWs and recommended the development of personalized support to CHWs.[11,12]

[10] Ministry of Health (2009). Community IMCI / Community Case Management: Evaluation Report of Community Health Workers Performance May 2009

[11] MCHIP-Ikiraro (2012). Individual Performance Assessment of CHWS in 5 Districts of Rwanda: Nyarugenge, Kicukiro and Gasabo in Kigali City, Ruhango and Nyamagabe.

[12] Raharison S, Ahoranayezu J, HarerimanaM (2012). Promising and Best Practices for Child Survival in Rwanda: Contribution of the MCHIP Ikiraro Project, Jan 2011-July 2012 – INTERNAL REPORT

Since its introduction, the community case management of childhood illnesses program has undergone many updates and improvements. Various partners, including MCSP, have joined efforts to work with the MOH to adapt strategies to address the above-mentioned issues, such as the change from individual forms to CHW integrated register, the dosing and packaging of drugs, the disease diagnosis kits, the management of community health data, and the shift from traditional supervision to mentorship and a focus on CHW motivation. The current evaluation can provide insights on the effects of these multi-faceted interventions.

II. RATIONALE AND GOALS FOR THE ICCM ASSESSMENT

This evaluation was designed to provide information that will help strengthen the community health program in the context of integrated management of childhood illness focused on the following questions:

- How well do CHWs perform the components of iCCM?
- What are the current supervision practices implemented by health center supervisors responsible for supervising CHWs?
- What supply chain mechanisms are in place to ensure availability of iCCM commodities at community level?
- How well do Cell coordinators report to the HC?

III. OBJECTIVES

GENERAL OBJECTIVE

This evaluation was designed to provide information to the Ministry of Health and its partners to help them strengthen the iCCM program, focusing on general case management by CHWs.

SPECIFIC OBJECTIVES

The specific objectives of the evaluation are to:

- Assess the caseload of CHWs in iCCM;
- Assess the correctness of decision made/treatment provided by CHWs according to the recorded symptoms and classification;
- Calculate the proportion of children under five years who were treated according to the national guidelines;
- Assess supervision practices;
- Assess the availability of key iCCM commodities

IV. METHODOLOGY

Sample Design

At least three months of iCCM implementation had been inclusion criteria for CHWs.
This is the sample framework. Eight districts were selected following the period of initiating community health interventions.

In each of the 8 selected districts, four health centers were randomly selected for a total of 32 health centers. The selection was based on their location:

- Two located in the village nearest to the district hospital (not located in the same village as the district hospital); and
- Two located farthest away from the district hospital.

In each selected health center, two CHWs with at least three months of experience in RDT use were selected: one at a village far from the health center and two close to a health center. In total 64 CHWs were assessed. One cell coordinator per Health center was interviewed, this cell coordinator had to be to be supervising one of the selected CHWs. Reporting tools from one CHW from each of the 32 selected HC were assessed for accuracy, timeliness and completeness of reporting from the community level up to the electronic report submitted to the central level (SISCom).

Sampling and site selection

Eight districts were chosen by the Ministry of Health (MCCH and Mal&OPDD/RBC) for this evaluation to gain information from a variety of settings in which iCCM is implemented, using the following criteria:

- Two (2) endemic districts that piloted the iCCM initiative prior to integration with HBM for children under five: Kirehe and Ngoma;
- Two (2) endemic districts that rolled out HBM and integrated iCCM for children under five afterwards: Nyagatare and Gisagara;
- Two (2) non-endemic districts that piloted RDTs and treating with PRIMO for children under five: Gakenke and Gicumbi;
- Two (2) districts that started the implementation of iCCM for children under five with the full package later than other districts (2010-2011): Musanze and Nyamagabe.

In all eight districts, the community health workers are responsible for implementing an integrated community case management approach that addresses acute respiratory infections (ARI), diarrhea, malaria, and nutrition.

Record review

All reports and data collected were reviewed by the assessment team to extract information on the effect of the iCCM program.

Data Collection

Key research question	Specific Objectives	Participant group	Key assessment questions	Method / Tool used	Sample Size
How well do CHW perform the components of iCCM?	- Assess the caseload of CHWs in iCCM - Assess the correctness of decision made/treatment provided by	CHWs	- Do CHW perform a complete assessment? - Do CHWs make a correct diagnosis based on test results?	- Case Review Form - CHW General information form	8 districts x 4 facilities x 2 CHWs = 64 CHWs

Key research question	Specific Objectives	Participant group	Key assessment questions	Method / Tool used	Sample Size
	CHWs according to the recorded symptoms and classification - Calculate the proportion of children under five years who were treated according to the national guidelines		- Do CHWs conduct appropriate referrals? - Do CHWs report to counsel clients? - Do CHWs provide correct treatment based on test results? - What are the strengths of the program and what improvements are needed in terms of community education and mobilization?	- HC supervision form - Interview with CHWs	
What are the current supervision practices implemented by health center supervisors responsible for supervising CHWs?	- Assess supervision practices	The supervisor of Community Health	- Are HCs supervising CHWs? - What types of supervision are being used by HCs (chart review, direct observation, consultation, mentorship)? - How Frequent HC supervising CHW? - How complete are supervision reports? - What are the strengths of the program and what improvements are needed in terms of Supervision from Cell and Health Center?	- HC Supervisor interview form - HC supervision form - Cell Coordinator Supervision form - CHW general information form -	- 32 HC supervisors/In charge of CHWs - 64 CHWs
What is supply chain mechanisms	- Assess the availability of	Pharmacy manager/ pharmacist at the	- Do CHW request iCCM	- Pharmacist Drug	- 64 CHWs - 32 HC pharmacy managers

Key research question	Specific Objectives	Participant group	Key assessment questions	Method / Tool used	Sample Size
in place to ensure availability of iCCM commodities at community Level? Are they adequate (e.g. facilities don't have stockouts)?	key iCCM commodities	district pharmacy/CHWs	commodities on time? - Are stock cards complete and on date? - How long CHW and how many time - Did CHW have a stock out of iCCM commodities lasting more than 7 days? - What are the strengths of the program and what improvements are needed in terms of medication supply management?	management form - Review of stock cards - Review of requisition forms - CHW Drug Management form - CHW general information form - HC Supervisor interview form	- 8 district pharmacists
How well do Cell coordinators report to the HC?	- Assess the timeliness and quality of recording and reporting in iCCM sites	Supervisor of Community Health	- Do Cell coordinators collect reports from all CHWs on time? - Do Cell coordinators submit reports to HCs on time? - Are data transcribed correctly from CHW registers to the monthly summary forms? - Are the monthly summary forms / reports correctly transcribed to SISCom? - What are the strengths of the program and what improvements are needed in terms of Record keeping and reporting?	- Review of cell coordinators reports - CHW general information form - HC Supervisor interview form - HC iCCM compiled reports - HC SISCom	- 32 cell coordinators - 32 HC supervisors/In charge of CHWs

Key research question	Specific Objectives	Participant group	Key assessment questions	Method / Tool used	Sample Size

Community Health Worker assessment on case management and pharmaceutical management

Standardized questionnaires were administered to selected CHWs, CHW supervisor at cell level (also operating as a CHW), HC staff (including the store manager and Titulaire), and the pharmacy manager/pharmacist at the district pharmacy.

Assessed topics were:

- Performance through review of patients forms and interview;
- Availability and use of key iCCM medicines;
- Accuracy, timeliness and completeness of reporting.
- Appropriateness of pharmaceutical stock management and record keeping; and
- iCCM supervision mechanisms.

Interviews with supervisors at different levels were also conducted to determine the frequency of supervision visits, use of checklists, and lessons learned.

Questionnaires

The 2017 iCCM Evaluation involved eight questionnaires: CHW General Information form and interview, CHW drug management, Pharmacist Drug management form, HC supervision form, Cell coordination form, Cell coordinator supervision form, Case Review form, and the HC Supervisor interview form.

Data Analysis

Collected data were double entered for quality control purposes in CSPro software. Data were then cleaned and analyzed in STATA.

Study Implementation

The study began on the 7th August 2017 shortly after final approval from the Rwanda Ministry of Health Institutional Review Board. Meetings were organized with district leaders to inform them on the beginning of the study,and the data collection strated on the 7th August 2017 and ended on the 11th August 2017.

VI.RESULTS

6.1. Demographic Characteristics of Community Health Workers

A total of 57 (62) CHWs in the 28 HCs (32) were interviewed during the period of the survey. Table 1 provides brief information on their background characteristics.

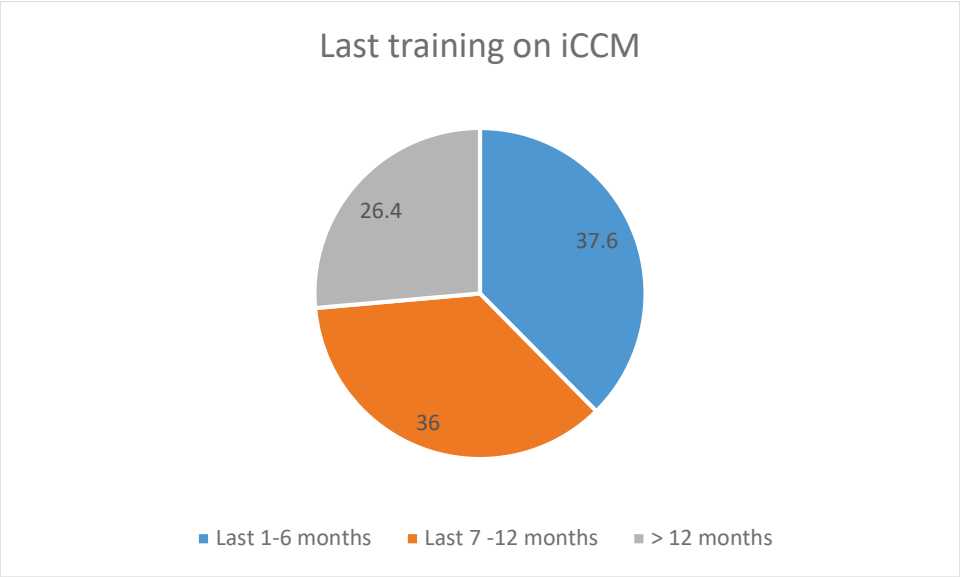
Table 1. Characteristics of CHWs interviewed by socio-demographic characteristics

Age of interviewees						
	Male		**Female**		**Both Sexes**	
	Percent	**Count**	**Percent**	**Count**	**Percent**	**Count**
_25 to 29yrs	**4**	**1**	**0**	**0**	**1.8**	**1**
_30 to 34yrs	**12**	**3**	**15.6**	**5**	**14**	**8**
_35 to 39yrs	**12**	**3**	**6.3**	**2**	**8.8**	**5**
_40 to 44yrs	**28**	**7**	**18.8**	**6**	**22.8**	**13**
_45 to 49yrs	**16**	**4**	**25**	**8**	**21.1**	**12**
_50 plus	**28**	**7**	**34.4**	**11**	**31.6**	**18**
Total	**100**	**25**	**100**	**32**	**100**	**57**
Education level of interviewees						
	Male		**Female**		**Both Sexes**	
	Percent	**Count**	**Percent**	**Count**	**Percent**	**Count**
primary only	**24**	**6**	**18.8**	**6**	**21.1**	**12**
some secondary	**52**	**13**	**46.9**	**15**	**49.1**	**28**
completed secondary	**20**	**5**	**34.4**	**11**	**28.1**	**16**
post secondary	**4**	**1**	**0**	**0**	**1.8**	**1**
Total	**100**	**25**	**100**	**32**	**100**	**57**
Profession of interviewees						
	Male		**Female**		**Both Sexes**	
	Percent	**Count**	**Percent**	**Count**	**Percent**	**Count**
None/out of work	**8**	**2**	**0**	**0**	**3.5**	**2**
Farmer	**80**	**20**	**96.9**	**31**	**89.5**	**51**
Business person	**4**	**1**	**0**	**0**	**1.8**	**1**
Salaried	**8**	**2**	**0**	**0**	**3.5**	**2**
Trade/artisan	**0**	**0**	**3.1**	**1**	**1.8**	**1**
Total	**100**	**25**	**100**	**32**	**100**	**57**
Marital Status of interviewees						
	Male		**Female**		**Both Sexes**	
	Percent	**Count**	**Percent**	**Count**	**Percent**	**Count**
Married/living as a couple	92	23	78.1	25	84.2	48
Separated/divorced	4	1	3.1	1	3.5	2
Widowed	4	1	18.8	6	12.3	7
Total	100	25	100	32	100	57

A total of 57 (64) CHWs were interviewed. 31.6% of CHWs was above 50 years, while the smallest group age (1.8%) was between 25 to 29 years. Males were more represented represented with 56.2% and 43.8% for female. 89.5% of CHWs were farmers and 3.5% of CHWs were unemployed or had no other occupation .84.2% of CHWs were married, while 12.3% were widowed.

6.1.1 Capacity building of Community Health workers

Figure 1. Last Training of CHWs on iCCM



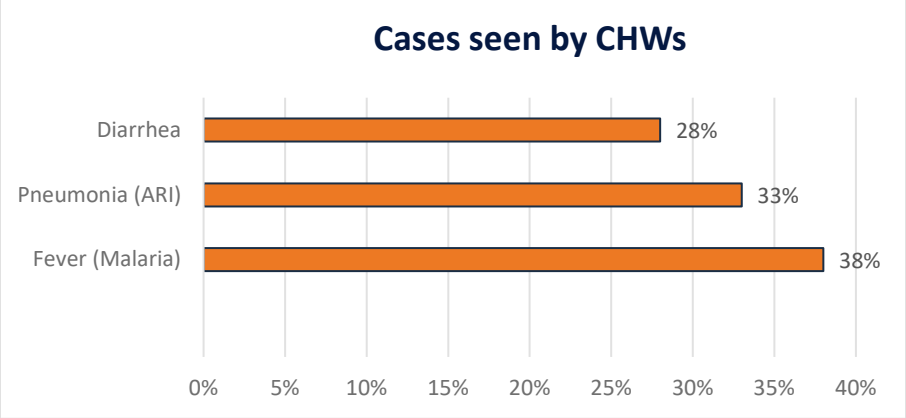
37.6 % of respondents reported that they have been trained in six past months, while 36% reported to have received their last training on iCCM from the 7 to 12 past months. 26.4% of CHWs responded to their last training on iCCM was more than one year prior to the survey.

6.2 Results by Objectives

Assess the caseload of CHWs in iCCM

Case review forms for the last 3 months prior the survey were reviewed (May-June-July 2017), and treated cases were counted.

Figure 2. Distribution of cases received by CHWs



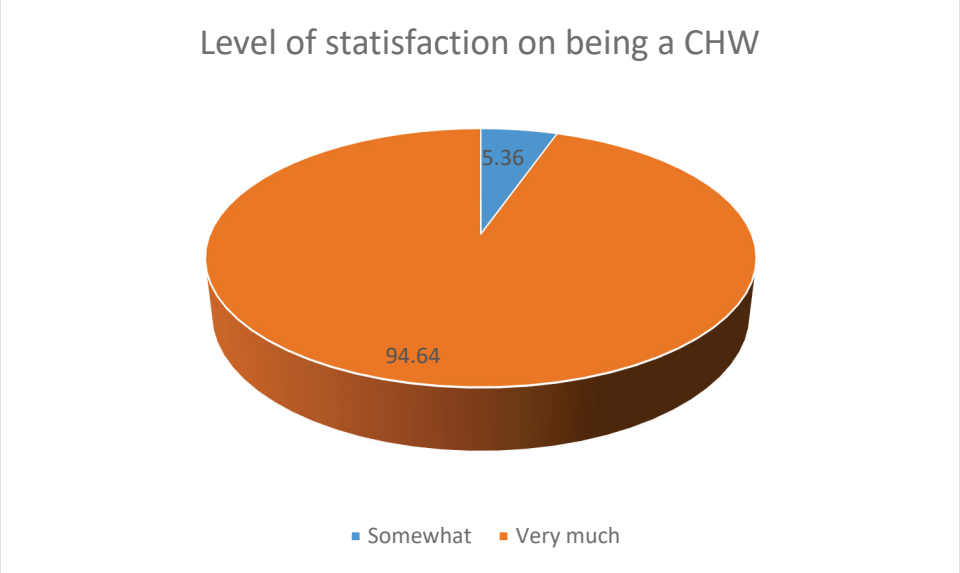
As shown in Figure 1, Fever (Malaria) cases were most seen by CHWs (38%) followed by Pneumonia case (33%) in the last 3 months.

Table 2. Time spent on CHW activities

Time spent on CHW activities (in minutes)				
	N	Average	95% CI	
Time to see one sick child	57	33.15789	30.1	36.1

CHWs spend around 33 minutes treating one sick child.

Figure 3. Level of satisfaction being a CHW



94.6% of CHWs like very much their work as CHWs

Assess the correctness of decision made/treatment provided by CHWs according to the recorded symptoms and classification

We evaluated individual sick child management forms on whether the CHW had followed national protocols, using two binary (yes/no) outcomes for documented quality of care: *correct* (age-specific) and *adequate* (non-age-specific) treatment by symptom (see Table 3). In this evaluation, we assumed that documented treatment reflect treatment provided by CHWs, though this may not always have been the case.

Table 3. Definition for adequate and correct treatment outcomes

Definition for adequate and correct treatment outcomes		
Classification documented	**Adequate treatment**	**Correct treatment**
Diarrhea (3+ loose stools in last 24 hrs)	Any ORS and Any zinc or refer	Age-specific ORS and Age-specific zinc or refer
Pneumonia (RR>40 if <1yr; >50 if >1yr)	Any amoxycillin or refer	Age-specific amoxycillin or refer
Malaria/ History of fever and RDT+	Any Primo (ACT) or refer	Age-specific Primo or refer

Figure 4. Overall Percentage of children U5 treated according National guidelines.

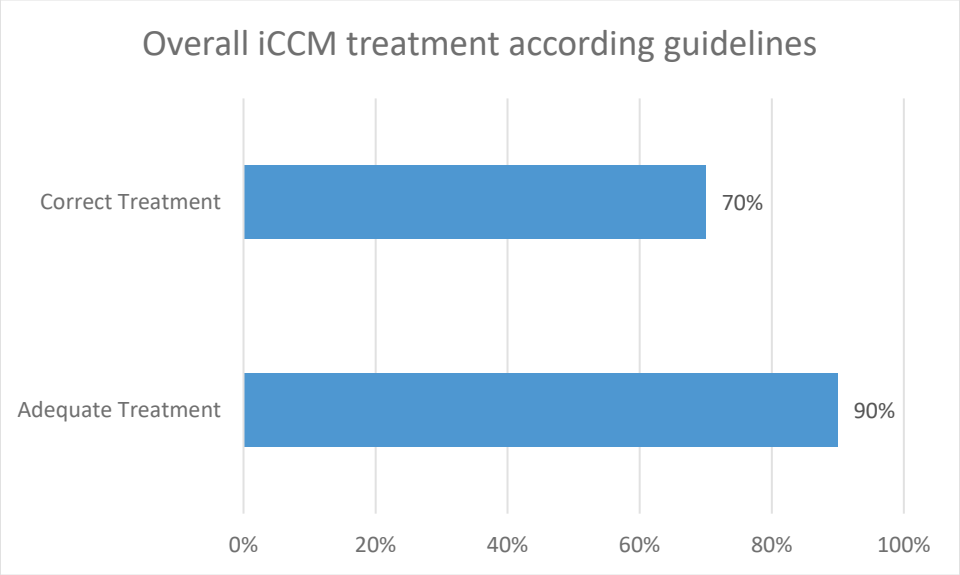
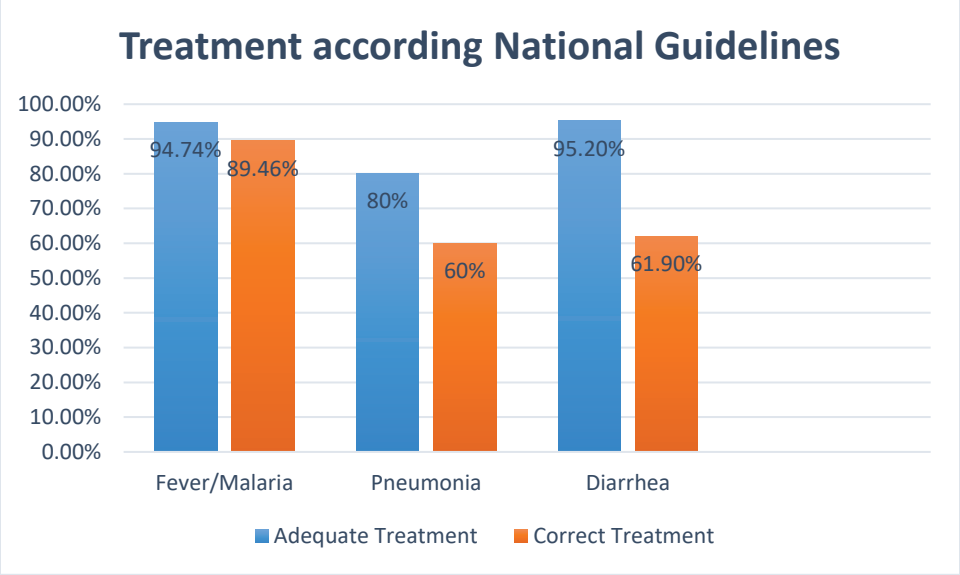


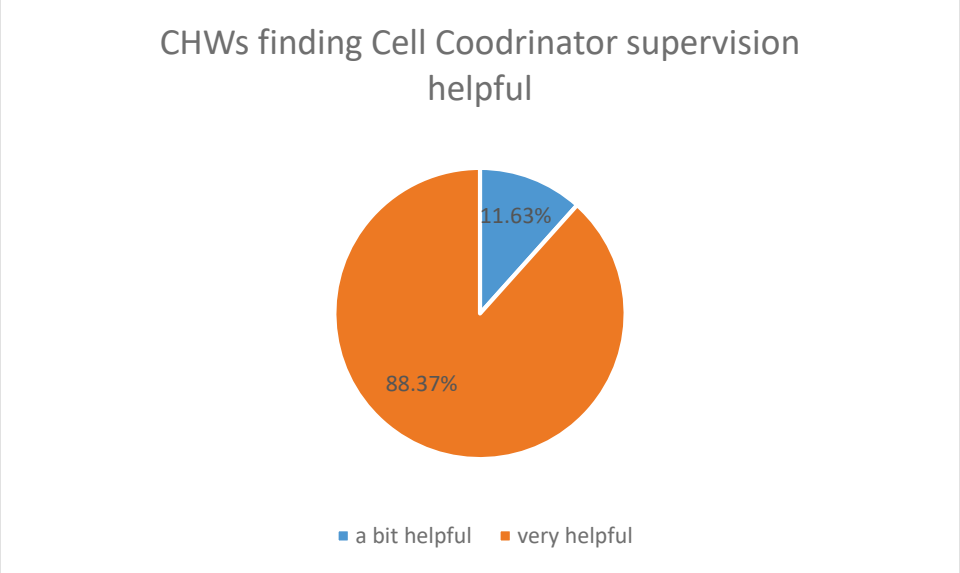
Figure 5. Percentage of Children U5 per disease treated according National guidelines.



CHWs provided adequate treatment more frequently than correct treatment, as expected. Overall, 90% of cases were adequately treated, with only 70% correctly treated.
Fever/Malaria is the most adequately and correctly treated, while Pneumonia was the less adequately and correctly treated.

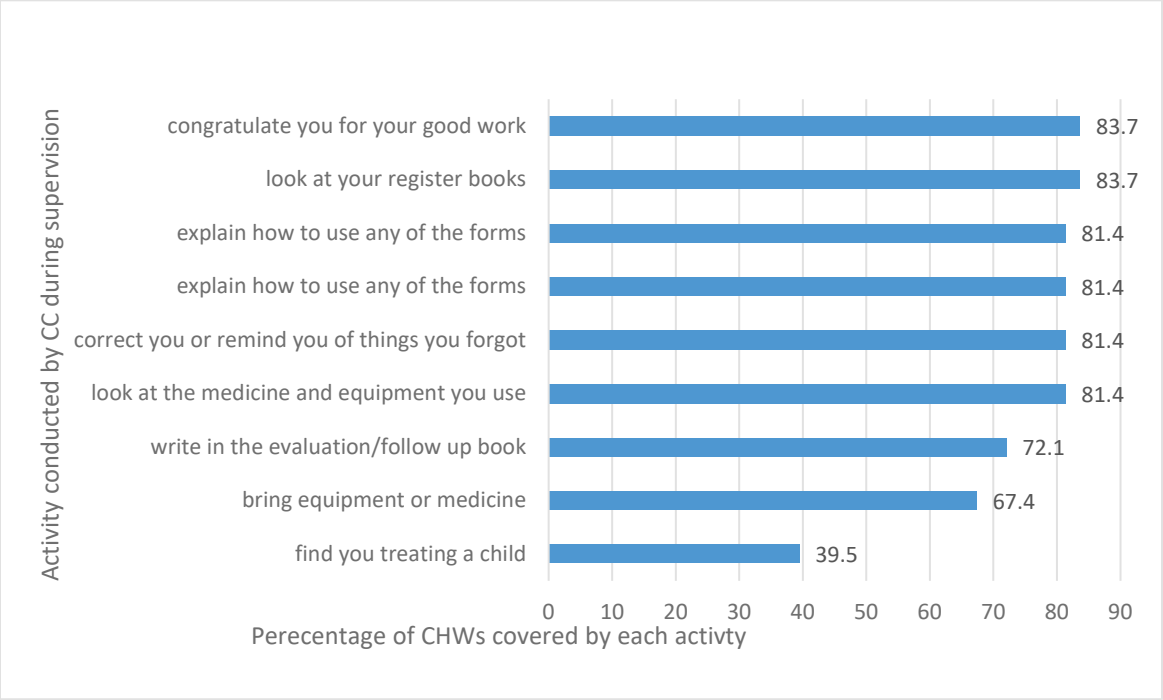
Assess supervision practices

Figure 6. CHWs Satisfaction regarding Cell Coordinator supervision



88.3% CHWs found very helpful supervision conducted Cell coordinators

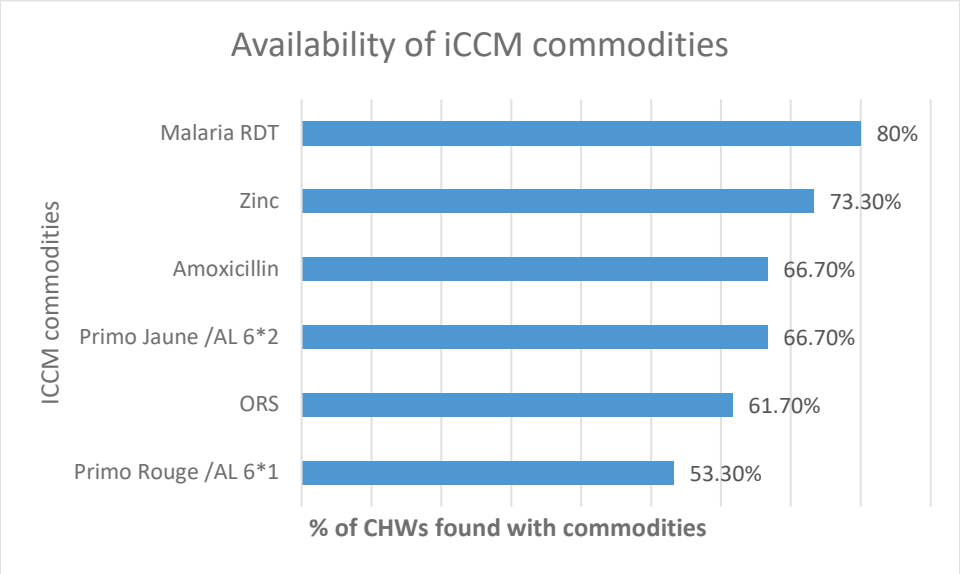
Figure 7. Key activities conducted by Cell coordinators during CHWs supervision



Key activities which need to be conducted by Cell coordinators during supervision were conducted at a satisfactory percentage above 80% for activities such as explaining how to use iCCM fomrs and looking at the registers, finding CHWs treating patient was only 39.5% ,this is probably due to the fact that CHWs can't predict when he will have a sick child and also the time of the visit as many children at community are treated after 5 PM, while supervisions are conducted during working hours.

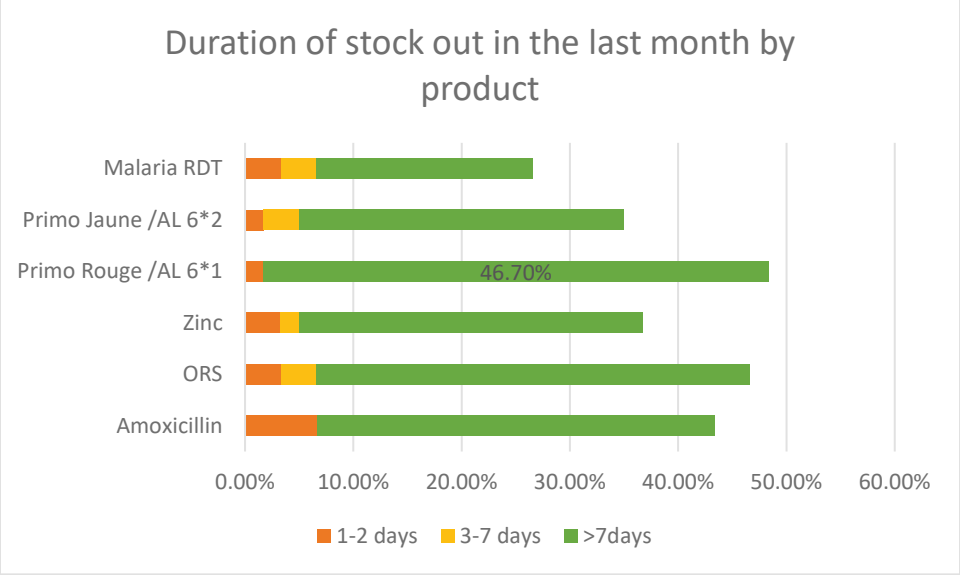
Assess the availability of key iCCM commodities

Figure 8. Availability of Commodities during the time of the study



Primo Rouge/AL 6*1 was found only among 53% of CHWs while Malaria RDT was the most available at 80% of all CHWs.

Figure 9. Duration of stock out in the last month



One month prior the study, most of the commodities has a stock out period exceeding more than 7 days, with Primo Rouge/AL6*1 being the product with a longer period out of stock .

V. Discussion and Conclusions

The overall goal of this evaluation was to document performance of the CHWs and the quality of care provided by CHWs to children under five years with malaria, diarrhea, and pneumonia. The results clearly shown that CHWs are experienced enough and they received required tools and support to deliver as it is expected. 70% of children treated by CHWs for all IMCI pathologies considered are being treated correctly according to the national protocols using retrospective files verification. Malaria was found the IMCI pathology most treated by CHWs followed by Pneumonia, Malaria was also found the most correctly treated by CHWs at 89.5% . Though CHWs found very helpful supervisions conducted by cell coordinators this evaluation shown that CHWs are not supervised regularly by Cell Coordinators and Cell coordinators by Health Centers this is probably due to lack of resources attributed to these activities.

Avoid of frequent stock out is a key factor for success of the community case management. As founded in other previous HBM assessments, the availability of community health commodities still inconsistent especially at the community level. During the survey, questions have been addressed to the supply chain entities at Health center level and at CHWs level and found availability of drugs at HCs but several commodities at community level, Artemether Lumefantrine 6x1 or Primo Red being the most out of stock. Strategies to improve drug supply, and support supervision are necessary to improve the performance of CHWs. CHWs use many tools thus lack adequate time to follow all steps correctly when providing services

VI. Recommendations

Further analysis could be conducted, especially in comparing performances of CHWs and their location (near of far from the HC).

Main recommendations

- Strengthen capacity of CHWs in treating the IMCI pathologies
- Improve CHWs supervision system
- Improve and strengthen iCCM commodities supply chain, especially at community level
- Strengthen iCCM commodities supply chain, especially at community level through supervision and mentorship conducted by health centers and district hospitals
- Simplify iCCM tools used by CHWs to decrease burden and improve quality of services