



Comprehensive Evaluation of the Community Health Program in Rwanda

FINAL REPORT

Liverpool School of Tropical Medicine
Centre for Maternal and Newborn Health
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REPUBLIC OF RWANDA



MINISTRY OF HEALTH



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The Centre for Maternal and Newborn Health (CMNH), from the Liverpool School of Tropical Medicine (LSTM) conducted the comprehensive evaluation of the Community Health Program (CHP) in Rwanda, from 20 January to December 2016.

Throughout its various stages, the evaluation design and implementation followed the terms of reference approved by the Ministry of Health (MoH), the Rwanda Biomedical Centre (RBC) and the United Nations Children Fund (UNICEF) for this evaluation.

In April 2016, following initial consultations in Rwanda and a thorough review of available secondary data and literature, an inception report presenting the proposed evaluation design was submitted to the Evaluation Steering Committee (ESC) and approved. Following the reviews and approvals from relevant authorities (RNEC; National Institute of Statistics of Rwanda), data collection took place in August and September 2016. Fifty-six stakeholders were consulted through in-depth interviews at various level of the health system. One hundred and twenty-nine community members, including CHWs, were involved in evaluating the CHP through focus group discussions. In addition, a quantitative survey was undertaken at facility and CHWs level in 10 Districts, targeting 80 Health Facilities and 400 CHWs.

This Evaluation Report attempts to draw key lessons learnt during the implementation of the CHP in Rwanda and to offer evidence-based, independent reflections on possible short and long-term options that may be suitable to enhance its relevance, efficiency and effectiveness in a sustainable manner. Therefore, the views expressed in this report are those of the evaluation team and do not represent those of the institutions referred to in the report. The anonymous statements from key informants presented in the report, represent and express common findings rather than individual opinions.

In presenting this report, we wish to express our sincere appreciation to all the institutions and individuals who have contributed in various capacities to the evaluation of the CHP in Rwanda, including: community members, CHWs, health workers, health managers, policy makers, members of donor institutions, non-governmental organisations and United Nations (UN) Agencies. In addition, we wish to thank Management Sciences for Health for developing and implementing a costing study of the CHP in coordination with LSTM. This study, which is a separate piece of research, has contributed to enrich the evaluation once its results are shared.

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The evaluation team,
Liverpool, 5th of December 2016

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARI	Acute Respiratory Infections
ARSH	Adolescent Reproductive and sexual Health
ASM	Assistante Maternelle de Santé
BCC	Behaviour Change Communication
CBHI	Community Based Health Insurance
CBNP	Community Based Nutrition Program
CBPFP	Community Based provision of family Planning
CHP	Community Health Program
CHSP	Community Health Strategic Plan
CHU	Community Health Unit
CHW	Community Health Worker
CHWC	Community Health Workers' Cooperative
c-MNH	Community Maternal and Newborn Health
c-PBF	Community Performance Based Financing
DAC	Development Assistance Committee
DALYs	Disability-adjusted life years
DHMT	District Health Management Unit
DHS	Demographic Health Survey
DHU	District Health Unit
DOT	Directly Observed Treatment
EBF	Exclusive breastfeeding
ECD	Early Childhood Development
EDPRS	Economic Development and Poverty Reduction Strategy
ESC	Evaluation Steering Committee
FGDs	Focus Group Discussions
FP	Family Planning
GBV	Gendre Based Violence
GDP	Gross Domestic Product
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
GGHE	General Government Health Expenditure
HB-MNH	Home-Based Maternal and Newborn Health
HC	Health Centre
HF	Health Facility ASM
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HPA	Health Poverty Action
HSSP	Health Sector Strategic Plan
iCCM	integrated Community Case Management
IGAs	Income Generating Activities
INT\$	International Dollars
ITNs	Insecticide Treated Bed Nets

KIIs	Key Informant Interviews
LF	Logical Framework
LLIN	Long Lasting Insecticidal Nets
LSTM	Liverpool School of Tropical Medicine
MCCH TGW	Maternal, Child and Community Health Technical Working Group
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
mHealth	mobile Health
MMR	Maternal Mortality Ratio
MNCH	Maternal, Newborn and Child Health
MNCHN	Maternal, Newborn, Child Health and Nutrition
MNH	Maternal, Newborn Health
MoH	Ministry of Health
MoU	Memorandum of Understanding
MSH	Management Sciences for Health
MUAC	Middle-Upper Arm Circumference
NCDs	Non Communicable Diseases
NGO	Non-Governmental Organisation
NISR	National Institute of Statistics of Rwanda
OECD	Organisation for Economic Cooperation and Development
ORS	Oral Rehydration Solution
PBF	Performance Based Financing
PMTCT	Prevention of mother-to-child transmission
PNC	Postnatal Care
RBC	Rwanda Biomedical Centre
RDHS	Rwanda Demographic Health Survey
RMNCH	Reproductive, Maternal, Newborn and Child Health
RNEC	Rwanda National Ethic Committee
RWF	Rwandan Francs
SBA	Skilled Birth Attendance
SIM	Subscriber Identity Module
SISCOM	Système d'Information Sanitaire Communautaire
TB	Tuberculosis
THE	Total Health Expenditure
ToC	Theory of Change
ToR	Terms of Reference
ToT	Training of Trainers
TWG	Technical Working Group
USD	United States Dollars
UN	United Nations Agencies
UNEG	United Nations Evaluation Group
UNICEF	United Nations United Nations Children's Fund
USAID	United States Agency for International Development
VCT	Voluntary Counselling and Testing

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1. OBJECT OF THE EVALUATION

1.1. CONTEXT

1.1.1. Country background

Located in Eastern Africa, Rwanda has an estimated population of 11.5 million people, of which approximately 14% are children under the age of five. Highly densely populated, the country is administratively divided into five provinces, which are in turn divided into 30 districts. The country population growth is estimated at 2.4% per annum, with 16.5% of the total population estimated to live in urban areas in 2012¹. Life expectancy is estimated at 64 years.

The 1994 genocide against the Tutsi decimated Rwanda's fragile economic base, severely impoverished the population, particularly women and temporarily stalled the country's ability to attract private and external investment. After this tragic event, Rwanda has maintained political stability since 1994.

According to the African Development Bank, *"Rwanda has evolved through a period of economic prosperity and macroeconomic stability in the past two decades. Real Gross Domestic Product (GDP) grew by an average of 8% annually, during the period 2000 to 2013, which is among the highest average growth rates in East Africa. Peace, political stability, high and sustained real GDP growth and sound macroeconomic management have contributed significantly to poverty reduction, increased income equality, improved social indicators and progress towards the MDGs. Decisive policies to increase access to primary and secondary education as well as water and sanitation, promote gender equality, increase access to and affordability of health services via a country-wide community-based insurance scheme, have been integral to this progress."*²

As well summarised by the World Bank³, *"Rwanda met most of the Millennium Development Goals (MDGs) by the end of 2015. Strong economic growth was accompanied by substantial improvements in living standards, evidenced by a two-thirds drop in child mortality and the attainment of near-universal primary school enrolment. A strong focus on home grown policies and initiatives contributed to a significant improvement in access to services and in human development indicators. The poverty rate dropped from 44% in 2011 to 39% in 2014."*

Rwanda's vision for the future is well defined in its manifesto for development and growth, Vision 2020, adopted by the Government in 2000 after a widely consultative process. The overarching goal of the Vision 2020 is to transform Rwanda from a low income, primarily rural economy into a middle income country, while ensuring unity and inclusive growth. To achieve such vision, the Government of Rwanda has embarked on a comprehensive program of privatisation and liberalisation with a goal of attaining rapid and sustainable economic growth.

Achieving the goals of Vision 2020 requires a profound transformation of the country economy. Amongst the major challenges, the economic development of the country also entails diminishing the dependence of the country from foreign aid, currently accounting for 30 to 40% of its total annual budget³.

In 2015, Rwanda ranked 163 of 188 countries in terms of Human Development Index.

¹ Rwanda Population Census, 2012

² The African Development Bank Group, 2014. *Improving economic competitiveness to bring about shared growth*.

³ <http://www.worldbank.org/en/country/rwanda/overview>

1.1.2. Maternal and child health in Rwanda: an overview

In line with its socio economic development, Rwanda has achieved remarkable progress in improving maternal and child health outcomes. According to recent estimates, the under-5 mortality rate has declined from 152 per 1,000 live births in 2005 (Rwanda Demographic Health Survey (RDHS) 2005) to 50 per 1,000 live births in 2014 (RDHS 2014-15); the neonatal mortality rate has also reduced from 37 per 1,000 live births to 20 per 1,000 live births. The maternal mortality ratio (MMR) has also successfully reduced: MMR was estimated at 750 per 100,000 live births in 2005, and at 210 per 1,000 live births in 2014-15 (RDHS 2014-15). Thus, Rwanda has met MDG 4 and 5 targets. Progress in improving child nutrition has also been observed, although at a more modest pace: child stunting prevalence was estimated at 51% in 2005 (RDHS 2005) and it was still as high as 38% in 2014-15 (RDHS 2014-15).

A number of social, political and economic factors have driven such a successful progress in rapidly improving maternal and child health in the country. The General Government Health Expenditure (GGHE) per capita has more than doubled during the period 2005-2015, reaching an estimated level of 47 International Dollars (Int\$) in 2014⁴.

As a consequence of the increased government allocation to the sector and of the improved country economy, the total health expenditure per capita has increased from 27 Int\$ in 2005 to 125 Int\$ in 2014, enhancing therefore the availability of health services for the population (Figure 1).

The increased investments in the sector, combined with the implementation at scale of targeted Maternal, Newborn Child Health and Nutrition (MNCHN) policies, and with parallel progress in

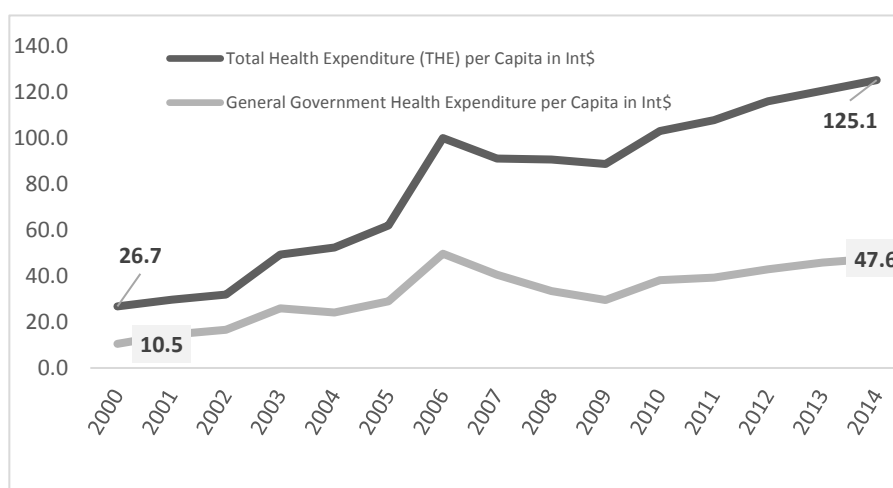


Figure 1. General Government Health Expenditure, 2000-2014

other key socio- economic indicators such as education, access to water and sanitation services, has sustained a dramatic increase in coverage of key MNCHN interventions.

Most interventions along the continuum of care for Maternal, Newborn and Child Health (MNCH) have shown substantial improvement during the past decade. As examples: skilled attendance at birth increased from 39% in 2005 to 91% in 2014-15; access to treatment for pneumonia from 28% to 54%; coverage of Oral Rehydration Solution (ORS) for diarrhoea from 12% to 28%; use of Insecticide Treated Bed Nets (ITNs) for children from 13% to 68% (RDHS 2014-15).

Despite the progress, which makes Rwanda a unique success story in Africa, some challenges persist:

- Inequities in access to services amongst the poorer remain a gap to be addressed;
- Urbanisation poses new challenges in delivering preventive and curative services to the population;
- The development of the country and its increased life expectancy will increasingly require a shift from tackling communicable diseases, to providing preventative and curative services for non-communicable diseases (NCDs)
- Last but not least, external funds still account for approximately 46% of the total health expenditure in Rwanda⁴, exposing therefore health policy and programs to dependency from external sources.

⁴ WHO, Global Expenditure Database (accessed in October 2016)

1.2. THE COMMUNITY HEALTH PROGRAM (CHP) AT A GLANCE

Program duration	CHP introduced in 1995
Initial program budget	57,420,372,004 Rwandan Francs (RWF) (2013-2018) ⁵ (approximately 71,287,150 United States Dollar (USD); <i>conversion at 2016 exchange rates</i>)
Estimated program costs (2015)	34,828,616 USD ⁶
Main Donors and partners	Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM), UNICEF, United Nations Population Fund, World Health Organization (WHO), United States Agency for International Development (USAID)
Lead Agency	Ministry of Health (MoH) of Rwanda; Rwanda Biomedical Centre
Geographic Focus	Nationwide (approximately 45,000 CHWs trained and deployed in all districts of Rwanda)
Target groups	Women of reproductive age, mothers and children under five years of age, adults at risk of infectious diseases
Vision	To ensure the provision of holistic community health care services so as to guarantee the wellbeing of the entire population of Rwanda ⁷
Goal	To improve the health of the Rwandan people through their full involvement and participation in the health delivery systems at all levels
Policy Objectives for Community Health	<ol style="list-style-type: none"> 1. To strengthen the capacity of decentralised structures to improve community health service delivery 2. To strengthen the participation of community members in the community health activities 3. To improve the monitoring and evaluation systems and coordination of community health services at central, district, HC and community levels 4. Strengthen the motivation of CHWs to improve health service delivery and access in the community
CHP Components	<ul style="list-style-type: none"> ▪ iCCM ▪ Community Maternal and Neonatal Health (c-MNH) ▪ Community based distribution of family planning services (CBPFP) ▪ Health Promotion and Behaviour Change Communication (BCC) ▪ Community Based Nutrition Program (CBNP) ▪ Non communicable Diseases, Human Immunodeficiency Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS), and Communicable diseases ▪ Community Health Information System (SISCOM) and Rapid SMS

⁵ National Community Health Strategic Plan 2013-2018. MoH, May 2013

⁶ The Costing of Rwanda's Community Health Workers Integrated Services. Management Sciences for Health, preliminary unpublished draft, November 2016

⁷ National Community Health Policy. MoH, June 2015

1.3. THE CHP DESIGN; IMPLEMENTATION AND LOGICAL MODEL

1.3.1. Overview of the CHP in Rwanda

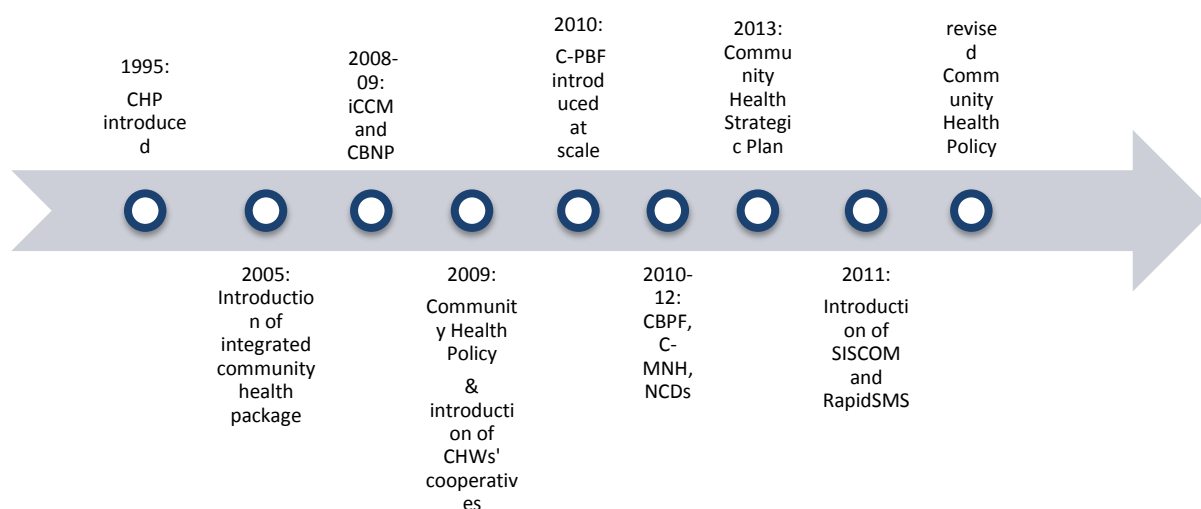
Rwanda started its CHP in 1995, soon after the genocide against the Tutsi. The number of CHWs was about 12,000. At that time, there was no policy, strategy or operational guidelines on how the CHP should be implemented. Initially, CHWs focused on health education and facilitated health campaigns; with time, their role evolved into a more comprehensive community-led initiative.

From 2005, after the decentralisation policy was introduced countrywide, there was sustained capacity building of the CHWs through training and supply of materials⁸. By 2011, the number of CHWs had grown to 60,000. In May 2012, the Ministry of Health and Ministry of Local Government decided to remove the CHWs in-charge of Social Affairs in all the villages. The number of CHWs was therefore reduced from 60,000 to approximately 45,000⁹. Each village is meant to have 3 CHWs. One CHW, named *Assistante Maternelle de Santé* (ASM), is in charge of maternal and newborn health and the other two CHWs consists in a Binôme. The Binôme is a male and female pair of CHWs who are multi-disciplinary, polyvalent health agents.

The range of services offered at community level by CHWs has evolved over time and so has its underlying policy, plans and implementation strategies.

A chronological summary of the key program features is provided below (**Figure 2**)

Figure 2. Chronology of the CHP



Regarding maternal, newborn and child health activities, the first service package to be introduced was iCCM. Between June 2008 and January 2011, Binômes were trained and iCCM was implemented in all 30 districts of Rwanda. Community-Based Nutrition Program (CBNP) was rolled out nationally between February and August 2009 with both ASMs and Binômes being trained and provided equipment for Maternal, Infant and Young Child Nutrition Counselling. Training of ASMs in Home-Based Maternal and Newborn Health (HB-MNH) started in March 2010. From September 2012, the MNH Community Program has been completed by the Prevention of Post-Partum Haemorrhage Program, with ASMs being trained to offer Misoprostol to women who deliver at

⁸ Rwanda Ministry of Health, 2013. *National Community Health Strategic Plan (2013-2018)*. Kigali, Rwanda.

⁹ Rwanda Ministry of Health, 2015. *National Community Health Policy*. Kigali, Rwanda.

home. The training of Binômes in Community-Based Provision of Family Planning (CBPFP) started in December 2010 and was rolled out in all 30 districts in March 2015. Due to insufficient financial resources, in 18 of the districts only one of the two Binômes in the village was trained in providing Family planning. In the other 12 districts, the two Binômes in each village were trained. Since March 2015, six districts have also started training ASMs in providing FP. The duration of the trainings varied according to available financial resources and which development partners support them. Community Health Workers are required to pass a test at the end of training sessions to be entitled to provide the related health services. Those who fail usually receive enhanced on-the-job training. A period may elapse before the CHWs start providing the service packages as they first need to receive equipment and supplies.

The policy framework regulating the CHP is described in section 1.3.2. below. A descriptive analysis of the key program features is presented in section 1.3.3.

1.3.2. Policy framework

Community participation is at the hearth at Rwandan culture, and of the Rwandan vision of development and of formulation of public policies.

The health sector makes no exception, and therefore the policy framework that regulates the CHP is well articulated and comprehensive.

The Government of Rwanda envisages a community that is organised, self-motivated, hardworking, forward-looking, and has the ability to exploit local potential with innovations geared towards sustainable development (Community Development Policy, 2008)

The Rwandan Constitution, Articles 41 and 45 states that all citizens have rights and duties relating to health. The State has the duty of mobilising the population for activities aimed at promoting good health and to assist in the implementation of these activities. All citizens are constitutionally granted the right of equal access to public services.

Stemming from such principles, the body of policies and plans that depict the long term country development vision, the MoH long term goals and the contribution of community health to those can be articulated at three levels:

- 1) overarching government policies and plans;
- 2) MoH Policies and Plans;
- 3) policies and plans related to community health.

These are analysed below.

Overarching Government Policies and Plans

The founding document setting Rwanda's long term vision for its growth and development is **Vision 2020**. Although explicit reference is not made within this document to community health, Vision 2020 clearly articulates that the role of communities is central to achieving progress: "*People's participation at the grassroots level will be promoted through the decentralisation process, whereby local communities will be empowered in the decision making process, enabling them to address the issues, which affect them, the most*"¹⁰.

The Rwanda Economic Development and Poverty Reduction Strategy (EDPRS2) translates the principles of Vision 2020 into clear priorities and targets for the country economic development. In doing so, the strategy refers to community based solutions as a model of proven success in Rwanda, adopted in various sectors (e.g. education, agriculture, health) to boost grassroots participation in social and productive activities.

EDSR2 makes explicit reference to community health as a model for other sectors; and sets the agenda for the expansion of CHWs as a platform for service delivery that is complementary to primary health care formal

¹⁰ Rwanda Vision 2020. Ministry of Finance and Economic Planning. July 2000

services “Geographical accessibility will continue to be improved by investing in the expansion of health infrastructure including equipping HCs and hospitals, construction of new HCs (...). Community level access will also be supported with the training of community health workers (CHW), strengthening CHWC, mobilising communities for their full participation in healthcare provision”¹¹.

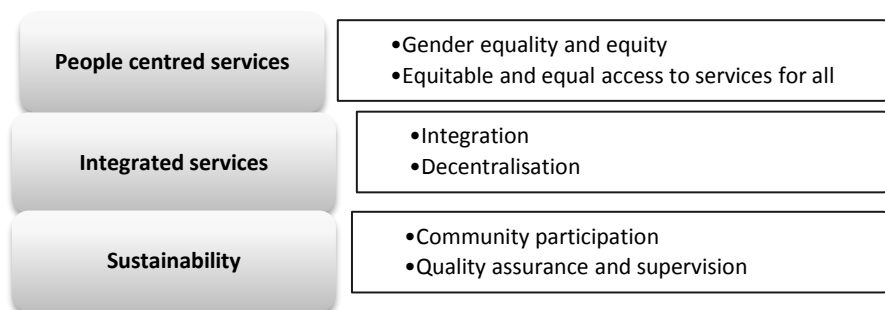


Figure 3. Guiding principles of the Community Health Policy

MoH Policies and Plans

The Health Sector Policy, which openly refers to Vision 2020 and EDPRS2 as its foundation documents, presents the CHP as a fundamental pillar of the model adopted in Rwanda to ensure the right to health for all citizens. The Policy also openly refer to task shifting as a successful strategy to ensure an effective and efficient division of labour at all levels of the system, and hence better access to services for the population.

“The initiation and implementation of community health services has increased outreach and brought health services closer to the people they serve (...). Implementation of the integrated community health services package which was initiated in 2005 has been one of the successful innovations in integrated decentralisation of health services. The Rwandan health system has greatly benefited from task shifting in which CHWs are delivering primary health services at the community level”¹².

The Third Health Sector Strategic Plan (HSSP) set the key priorities for the sector for the period 2012-2018. The Plan presents a thorough assessment of the CHP, identifying its strengths and successes, its challenges, and the key CHP strategies and interventions.

These are formulated across four areas: building the capacity of community health workers to deliver an essential package of services at community level; enhance coordination of community health activities at grassroots, facility, district and central level; introduce and scale up Rapid SMS as a system for real time reporting and referral of patients; evaluate the progress of cooperatives as a mechanism of sustainability of the CHP.

Community Health Policies and Plans

In line with the above described policy framework, the CHP vision, priorities and plans are defined by two key documents.

The Rwanda Community Health Policy, issued in 2008 and subsequently updated in 2015, provides the orientation for the implementation of community health activities nationwide, and presents a vision of *“holistic community health care services so as to guarantee the well-being of the entire population of Rwanda”¹³.*

The Policy illustrates the guiding principles that underpin community health (**Figure 5**), and sets its objectives as follows:

¹¹ Economic Development and Poverty Reduction Strategy. Ministry of Finance and Economic Planning. 2013

¹² Health Sector Policy. Ministry of Health. July 2014

¹³ Rwanda Community Health Policy. Ministry of Health. 2015

1. Strengthen capacity of decentralised health structure to improve community health service delivery
2. Strengthen community participation in community health activities
3. Improve the monitoring and evaluation systems and coordination at central, district, HC and community levels
4. Strengthen the motivation of CHWs to improve health service delivery

The National Community Health Strategic Plan (CHSP) (2013-2018) describes in detail the program design, coordination mechanisms, the package of services to be delivered at community level, and proposes a logframe for monitoring the plan. It also attempts to present an estimate of the program costs for the period 2013-2018.

It is worth noting that the CHP was also designed to align itself with the MDGs goals and targets. In particular, the CHSP clearly indicates how community health will contribute to 10 MDGs targets, related to: poverty and hunger; child mortality; maternal health; infectious diseases; environmental health.

In June 2016, the agenda of the *Forward-looking Joint Sector Reviews 2016/2017* embraced the SDGs as a new important guiding framework to set its long term goals and indicators.

1.3.3. The CHP design and rationale

The CHP is described in detail in the CHSP, in terms of its model of delivery; structure; program components; and responsibilities.

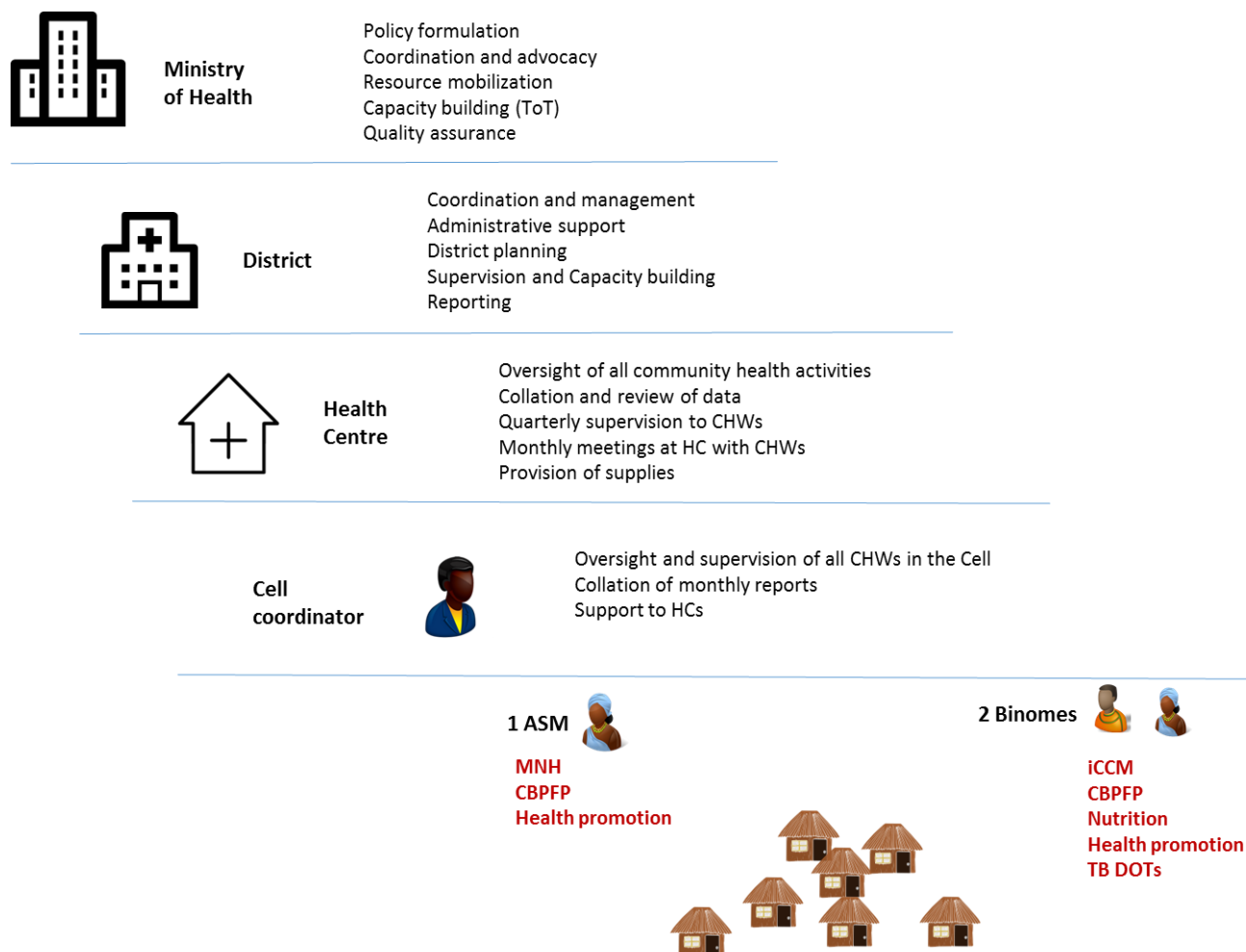
In short, the CHP was designed and consolidated over time on the basis of a fixed model of deployment of CHWs at community level, which follows the administrative structures of the country.

The pyramid of implementation of the CHP is shortly described below:

- ⇒ In each of the 14,873 villages of Rwanda, 1 ASM (female) and 2 binomes (1 male and 1 female) are trained and deployed to provide community health services (approximately 45.000 CHWs in total);
- ⇒ Villages are clustered in cells. There are approximately 2,150 cells in Rwanda. For each cell, two cell coordinators, who are senior CHW, supervises all the CHWs of his/her catchment area;
- ⇒ HCs are the primary point of contact with the formal health system for the population, at sector level. They serve a number of cells/villages. In the 480 HCs of Rwanda, *in-charge of CHWs* are appointed to coordinate all community health activities within the HC catchment area, and to provide capacity building and supportive supervision to CHWs. For each HC, there is also one Cooperative set up which groups the CHWs of the area.
- ⇒ HCs report to District Hospitals. There are 42 DHs in the 30 Districts of Rwanda. At District level, a focal person for the CHP is appointed at District Hospital level and oversees all the activities of CH in the District.
- ⇒ At central level, the MoH is the primary government entity in charge of implementing and monitoring the community health policy and strategy. The Rwanda Biomedical Centre (RBC) is instead in charge of the day to day oversight, coordination and implementation of the activities. Within RBC, a *Community Health Desk* is the primary Unit coordinating the CHP.

The structure of the CHP is summarised in **Figure 4** below

Figure 4. CHP: roles and responsibilities



Source: Authors

The major program components are described in detail here below:

⇒ **Recruitment of CHWs**

Community health workers are meant to be elected in the community by the community, most of the time during the Umuganda – a monthly community meeting - although it may take place in other fora that bring people together in the village. The HC proposes and supervises the elections and the executive committee of the village organises them. The day of the elections, those who are interested in becoming CHWs present themselves to the community and the community elects the candidate of their choice by lining up behind her/him. Qualifications to become a CHW require the following: ability to read, write and calculate; having completed at least primary level education; being aged between 20-50 years; willing to accept volunteer status; being resident of the village he/she is elected to serve; not being a local leader or a remunerated health worker at a health facility; being honest, reliable, and trusted by the community⁷. There are no term limits.

⇒ **Training of CHWs**

After recruitment, new CHWs receive an induction training at health centre. After this induction training, they are entitled to conduct health promotion activities in the community. Afterwards, CHWs receive trainings on

the various community health activities that they will need to carry out. Both Binomes and ASMs are meant to receive trainings on Maternal, Infant and Young Child Nutrition, as well as Tuberculosis and RapidSMS. Binomes are meant to receive specific trainings on iCCM and provision of Family Planning, while ASMs are meant to receive specific trainings on Maternal and Newborn Health. Some CHWs have also been trained in sensitizing community to Gender-Based Violence, Mental Health and Early Childhood Development. More recently, Binomes have started being trained in providing malaria treatment to adults. At the end of the trainings, each CHW is assessed. Those CHWs who do not pass the test are not allowed to provide the health services and need to be re-trained.

The frequency of group trainings and group refresher trainings depends on the needs but also on the availability of the funds. There is no guideline on when to conduct refresher trainings and no standardised modules of refresher trainings. When funds are not available, the in-charge of CHWs at health centre and health centre staff try to provide on-the-job training to CHWs during supervision visits or allocate time for training during the monthly CHWs coordination meetings at health centre. Trainings are organised following a cascade model. The central level is responsible to train Master Trainers who will, in turn, conduct trainings of trainers (ToT) with relevant staff at District Hospitals. Trainers at district hospitals will, in turn, train health providers at health centres to train and supervise CHWs.

⇒ **Service packages offered by CHWs**

Assistantes Maternelles de Santé and Binômes jointly carry health promotion and BCC activities on hygiene and sanitation, early seeking care behaviour, breastfeeding, infant and young child feeding, birth spacing and family planning (FP). They mutually promote the use of treated mosquito nets and sensitise the community about immunisation, HIV voluntary counselling and testing and timely payment of Community-Based Health Insurance (CBHI). They educate and screen the community for Gender-Based Violence (GBV) and NCDs and refer to HC when necessary. Both cadres identify Tuberculosis (TB) suspects in the community and refer them to the HC for sputum examination. They also accompany TB patients to the HC for follow up examinations and provide Direct Observed Treatment (DOT) in the community. Once a month, both ASMs and Binômes also monitor the growth of children under-5 using Middle-Upper Arm Circumference (MUAC) and weight for age (with a salter scale) and refer moderately and severely malnourished children to the HC.

Assistantes Maternelles de Santé carry out specific activities related to maternal and newborn health, targeting women and their newborns from pregnancy until the newborn reaches the age of two months. They identify and register women of reproductive age, identify pregnant women and refer/accompany them for antenatal care at the HC. They visit pregnant mothers at home at least three times during their pregnancy: one time as soon as pregnancy is confirmed, a second time between five and six months of pregnancy and a third time between eight and nine months of pregnancy. During home visits, ASMs identify danger signs and refer/accompany pregnant women to the HC; they provide birth preparedness and ensure that pregnant women have CBHI and sleep under treated mosquito nets. ASMs also screen pregnant women for malnutrition and advise on proper feeding and eventually they accompany them to the HC for delivery. In the case that a pregnant woman does not deliver at the health facility, some ASMs have been trained to offer the uterotonic drug Misoprostol to eligible mothers within two hours following the delivery, to prevent post-partum haemorrhage¹⁴. Assistantes Maternelles de Santé also need to accompany women who deliver at home, and their newborn baby, to the health facility within 24 hours of delivery for postnatal care (PNC). After birth, the ASMs visit the mother and the baby at home at least three times when the baby weight is normal (day one after discharge from health facility, between day 5-7 after delivery and day 28 after delivery) and at least five times when the baby weight

¹⁴ Dao, B et al. 2015. Increasing Access to Prevention of Postpartum Hemorrhage Interventions for Births in Health Facilities and at Home in Four Districts of Rwanda. *African Journal of Reproductive Health*. 19 (4), 58-67. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27337854> [Accessed 16th February 2016]

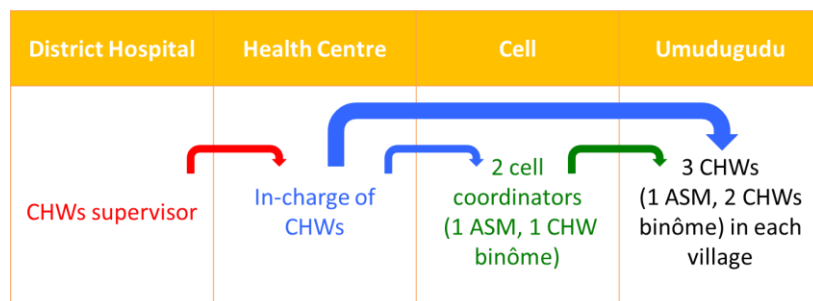
is low (day one after discharge from health facility, day five, day seven, day 14 and day 28 after delivery). During these PNC home visits, AMSs assess mothers and newborns for danger signs and refer them to the health facility, they support breastfeeding and care for low birth weight babies (feeding, skin-to-skin contact), weigh newborns, screen lactating mothers for malnutrition and provide them with nutrition advice¹⁵.

Binômes carry out specific activities related to integrated Community Case Management (iCCM), targeting 2-59 months old children. They diagnose and treat children for diarrhoea, pneumonia and malaria. They treat diarrhoea with ORS and zinc (10 mg). They use respiratory rate timers to diagnose pneumonia and treat it with amoxicillin (125 mg). They diagnose malaria with Rapid Diagnosis Tests and treat it with specific packaging of arthemether-lumefantrine (Primo red for children aged six months to three years and Primo yellow for children aged three to five years). With the rise of malaria prevalence in Rwanda, some Binômes have also recently started being trained to provide malaria treatment to adults. In addition, Binômes also screen children for malnutrition using MUAC and a scale to measure weight for age, refer malnourished children to health facility and follow up children provided with Ready-to-Use Therapeutic Food in the community. Binômes also carry out specific activities related to CBFPF and CBNP, targeting a larger scope of community members. Binômes sensitise community members of reproductive age to join Family Planning programs and refer them to the HC to initiate Family Planning. Binômes have been trained and entitled to re-supply family planning clients with oral contraceptive pills (Microlut® and Microgynon®), to administer contraceptive injection (Depo-Provera®), and to provide male and female condoms and menstrual cycle beads. They also visit and monitor clients who do not adhere to the Family Planning methods they have been given. In addition to monthly growth monitoring and screening children for malnutrition, Binômes also encourage households to ensure food security by promoting the setting up of kitchen gardens and the breeding of small and large live-stock. They also educate community members to have a balanced diet by offering culinary demonstrations. Finally, they promote in-home food fortification by providing micro-nutrient powder (Ongera) for children aged six months to two years old.

⇒ **Supervision of CHWs**

CHWs are supervised at two levels. At cell level, they are supervised by cell coordinators, usually one Binôme and one ASM who are experienced CHWs. These cell coordinators are unpaid and provide the same services as other CHWs in addition to their role of cell coordinators. Cell coordinators supervise completeness and accuracy of CHWs register and collect CHWs requisition for medicines and materials. Their role in data reporting and coordination is described in the sub-sections below. At HC level, CHWs are supervised by the in-charge of CHWs, who is responsible for reinforcing the competencies of CHWs and for ensuring proper functioning of the supply chain. Their role in data reporting and coordination are described in the sub-sections below. Guidelines state that cell coordinators should supervise their colleagues once per month, while the HC should visit each CHW at least once every three months. In addition, each district hospital has dedicated staff allocated to oversee the CHP. In-charge of CHWs at District Hospitals are expected to visit all in-charge of CHWs at HC in their area once a month.

Figure 5. Scheme of supervision of CHWs



Source: Authors

¹⁵ USAID, MCHIP and Save the Children. 2012. *Summary of Rwanda Country Experience – implementing PNC home visits*. Available from: <http://www.healthynewbornnetwork.org/resource/country-report-pnc-home-visits-rwanda/> [Accessed 23 February 2016]

⇒ **Community Health Information System**

Two Health Information Systems have been set in place for CHWs: the Community Health Information System (SISCOM - Système d'Information Sanitaire Communautaire) which is a paper-based system and the RapidSMS system, which is an mHealth system.

First, at umudugudu (village) level, the CHWs fill in a routine, monthly, paper-based community Health Management Information System (HMIS) form that comprises approximately 40 indicators, including the indicators of the community Performance-Based Financing (c-PBF) scheme. The cell coordinators collect the CHWs form monthly and organise meetings at cell-level to compile and discuss the data and ensure its validity and accuracy. Cell coordinators then submit CHW reports to the HC, where these reports are compiled by the in-charge of CHWs. The HC organises a meeting at the end of the month. It can be attended by all CHWs, the board of CHWs cooperative, the person in-charge of CHWs at the HC and assisted by the HC data manager. They compile the cell HMIS reports into a sector HMIS community report. For every indicator, the calculations are checked and possible data inconsistency is tracked. For the indicators that are linked to performance based financing (PBF) payment, the member of the CHWs Board and the HC staff check whether the number of services compiled through this exercise matches the number of services that have been recorded by the HC. The HC then enters the paper-based sector HMIS community report in the online HMIS database. Data is then analysed at national level.

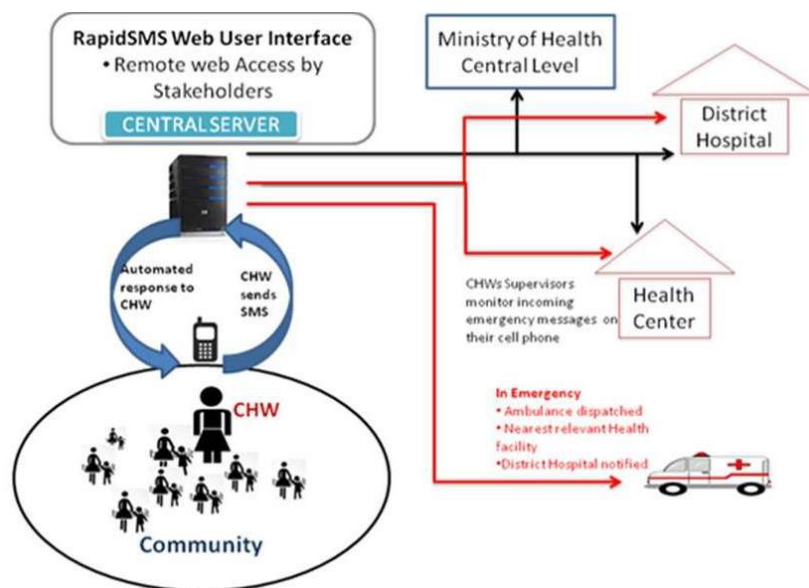
To strengthen community-level maternal and child health interventions, the MoH, in partnership with United Nations United Nations Children's Fund (UNICEF), also launched an mHealth system named RapidSMS. This allows interactive communication between CHWs, a national centralised RapidSMS database, the closest HC and district hospital and in case of emergency, the ambulance driver. The RapidSMS system was first piloted in Musanze District starting in 2009, then scaled-up nationwide starting in 2013.

In its first version, RapidSMS only tracked maternal health. CHWs received a mobile phone with a Subscriber Identity Module (SIM) card, a charging device, airtime and code cards¹⁶.

¹⁶ Ngabo, F., Nguimfack, J., Nwaigwe, F., Mugeni, C., Muhoza, D., Wislon, D., Kalach, Gakuba, R., Karma, C. & Binagwaho, A. 2012. *Designing and Implementing an Innovative SMS-based alert system (RapidSMS-MCH) to monitor pregnancy and reduce maternal and child deaths in Rwanda*. PanAfrican Medical Journal. 13 (31) Available from: <http://www.panafrican-med-journal.com/content/article/13/31/full/> [Access 28th February 2016]

CHWs report new pregnancies in the system and report all danger signs by sending an SMS to the server using a short code. The system then immediately triggers a specific feedback to the CHW. For normal pregnancy, the system will send automated reminders of forthcoming antenatal care visits and due date of delivery to the CHW. In case of danger signs, the CHW can send an emergency SMS alert to the system. Consequently, the system provides immediate feedback to the CHW, advising on immediate action. Ambulance request is forwarded to the nearest ambulance vehicle point and to the closest health facility for immediate intervention. The CHW can also contact or be directly contacted by the health facility.

Figure 6. Functionalities of the RapidSMS system



(Source: Ngabo et al., 2016, p. 13)

disabilities¹⁷. CHWs are encouraged to report cases through the RapidSMS system, as they receive financial incentives based on their performance. The RapidSMS database keeps clinical reports for maternal and child health sent by CHWs and can be exploited for epidemiologic purposes. The figure above demonstrates the functionalities of the RapidSMS system.

⇒ c-PBF and CHWC

In 2006, Rwanda set up a facility-based PBF strategy. Consequently, indicators on which health providers had control over improved significantly, but the progress for those indicators that depended on decisions made at community level was slower (antenatal care; utilisation of modern contraception)^{18,19}. Driven by the agenda of accelerating the reduction of child and maternal deaths, the MoH, with the support of the Global Fund and the World Bank, implemented the community-PBF strategy in 2008. Initially, financial incentives only covered indicators for quality of reporting (timely submission of monthly CHWs cooperative reports to the HC, completion and accuracy of the CHWs cooperative reports).

¹⁷ UNICEF. 2013. *The mobile phone – Rwanda’s key weapon in making maternal deaths history*. Accessed from: <http://www.unicef.org/2013/11/13/the-mobile-phone-rwandas-key-weapon-in-making-maternal-deaths-history/> [Accessed 18 October 2016]

¹⁸ Basinga, P., Gertler, P.J., Binagwaho, A., Soucat, A.L., Sturdy, J. and Vermeersch, C.M. 2011. Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation. *The Lancet*. 377(9775): pages 1421-1428. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/21515164> [Accessed 12 October 2016]

¹⁹ Shapira, G. 2016. *Impact Evaluation of the Rwanda Community Performance-Based Financing Program*. In: *RBF Health Conference*. [online] Washington: RBF Health. Available at: <https://www.rbfhealth.org/event/evaluation-rwanda-community-performance-based-financing-program> [Accessed 13 October 2016]

In 2009, the MoH launched a pilot c-PBF assessing the acceptability of the demand-side incentives strategy which consisted of the HC providing in-kind incentives (adult and baby clothes, water treatment tablets, soap and bed sheet, umbrella) to women who attended antenatal and PNC at health centres and those who delivered at HCs²⁰.

In parallel, by October 2010, a pilot c-PBF for supply-side incentives including five performance indicators related to maternal and child health was rolled out. In 2011, two performance indicators for TB were added, followed by two more performance indicators on Voluntary Counselling and Testing (VCT) and prevention of mother to child transmission (PMTCT) in 2012. Performance indicators are reviewed annually. The tables below (**Table 1; Table 2; Table 3**) show the evolution of performance indicators between 2008 and 2015. Over time, the unit fees for all supply-side indicators were reduced uniformly. In 2013, with external funding to the health sector beginning to decline, the MoH decided to drop the demand-side strategy and scaled up the supply-side strategy to all districts²¹.

Table 1: “Pay for Reporting” CHWC indicators (2009)

	Item		Payment (Max)
1	Timeliness	If all three monthly CHWC reports submitted to the HC prior or on the 10th of the month = 1 (40%), if one report is delayed = ½ (20%), if two or more reports delayed= ¼ (10%)	40% of available budget
2	Completeness	If all three monthly CHWC reports, including its monthly cell reports submitted to the HC are complete = 1 (40%), if one report (including one or any of its cell reports) is incomplete or absent = ½ (20%), if two or more reports (including any of its cell reports) are incomplete or absent = ¼ (10%)	40% of available budget
3	Accuracy	If internal logic in all three monthly CHWC reports submitted to the HC are correct = 1 (20%), if one report is faulty = ½ (10%), if two or more reports are faulty = ¼ (5%)	20% of available budget
		Total	100%

Adapted from: Community Performance-Based Program User Guide, 2009, page 15.

Table 2: C-PBF (2010-2014)

Indicator	Unit fee	Payment frequency
Nutrition monitoring: number of children monitored for nutritional status (6-59 months)	100 RWF/visit	Quarterly
Antenatal care: number of women accompanied to HC for prenatal care within first 4 months of pregnancy	1300 RWF	Quarterly
Institutional delivery: number of women accompanied to HC for assisted deliveries	1600 RWF	Quarterly
FP: number of new family planning users referred by CHWC to the HC	1700 RWF	Quarterly
FP: number of regular users of modern contraceptives at the HC	100 RWF	Quarterly
TB: number of TB patients followed at home in the community DOTS program	4,500 RWF/month	Quarterly
TB: number of “real” TB suspects referred to the HC	26,550 RWF	Quarterly

Adapted from: Shapira and Kalisa, 2016.

²⁰ WHO. 2013. *Community performance-based financing to improve maternal health outcomes: Experiences from Rwanda*. Available from: <http://www.afro.who.int/en/clusters-a-programs/hpr/social-a-economic-determinants-of-health/case-studies/country-experiences-sdh/4055-community-performance-based-financing-to-improve-maternal-health-outcomes-experiences-from-rwanda.html> [Accessed 16 October 2016]

²¹ Shapira, G. and Kalisa, I. 2016. *Rwanda Community Performance-Based-Financing Impact Evaluation 2013*. World Bank Group, University of Rwanda, Rwanda Ministry of Health.

Table 3. c-PBF indicators in 2015

Indicator	Unit fee	Payment Frequency
<i>Nutritional status</i> : Number of children monitored for nutritional status (6-59 months)	34 RWF	Quarterly
<i>Antenatal care</i> : Number of women accompanied to HC for prenatal care within first 4 months of pregnancy	480 RWF	Quarterly
<i>Institutional delivery</i> : Number of women accompanied to HC for assisted deliveries	600 RWF	Quarterly
<i>FP</i> : Number of new family planning users referred by CHWs to HC	630 RWF	Quarterly
<i>TB</i> : Number of TB patients followed at home in the c-DOTS program	6,400 RWF	Quarterly
<i>TB</i> : number of "real" TB suspects referred to HC	10,000 RWF	Quarterly
<i>VCT</i> : Number of households accompanied to HC for VCT	650 RWF	Quarterly
<i>PMTCT</i> : Number of couples / women accompanied to HC for PMTCT	650 RWF	Quarterly

Source: Authors

More recently, indicators related to Rapid SMS have also been included and comprise:

- 1) % of Binomes who submitted reports on RapidSMS (reporting rate)
- 2) % of children sick followed up by the CHWs during and after treatment (iCCM)
- 3) % of pregnant women reported in RapidSMS vs antenatal care (ANC) new registrations reported in HMIS
- 4) Number of newborn care visits by the CHWs
- 5) % of supervisions made to CHWs by the cell coordinator

In 2008-09, Community Health Workers' Cooperatives (CHWC) were created as a way of easing payment transfers and sustaining the financing of the c-PBF strategy through Income Generating Activities (IGAs), in anticipation of a prospective reduction of external funding. CHWs attached to the same HC are grouped into one CHWC. The MoH doesn't disburse c-PBF funds individually to CHWs but deposit them quarterly into the CHWC bank account based on a unit fee for each service CHWs provide.

Every three months a sector steering committee, composed of eight members (the in-charge of social affairs at sector level, the titulaire of the HC, the president of the CHWC, the person in-charge of CHWs at HC, the environmental health officer of the HC, the accountant of the HC, one community member and one representative of a Non-Governmental Organisation (NGO)) meets to validate the data reported by CHWs and allow PBF payment. If specific data quality problems are identified, the steering committee can decide to perform counter verification visits in one or several villages²².

CHWC distribute 30% of c-PBF payment directly to CHWs, while the remaining 70% is maintained in the CHWC account to boost cooperative capital investment and contribute to IGAs. Until 2015, the 30% of c-PBF amount were equally shared among CHWs whatever their individual performance. This has changed, and c-PBF remuneration is allocated individually to CHWs based on their individual performance.

Under the Memorandum of Understanding (MoU) between cooperatives and MoH, profits generated by the IGAs are distributed as follows: 30% of surplus is shared between members of cooperatives, 20% is being set

²² Renaud, A. & Semasaka, J.P. (2014) *Verification of Performance in Results-Based Financing (RBF): The Case of Community and Demand-Side RBF in Rwanda*. The International Bank for Reconstruction and Development. Washington, USA

aside for legal reserve and 50% of surplus is pooled in a national reserve fund managed by MoH to support community health initiative²³.

⇒ **CBHI**

The law N62/2007 promulgated in March 2008 states that all Rwandan residents must be affiliated to a health insurance scheme that provide health care²⁴. In line with this law, CBHI became mandatory for all sectors (including the informal sector). The population pays a premium once a year according to their financial situation. The community evaluates each household's financial situation and places it in one of six-economic categories. Health services offered by CHWs are free, with the exception of iCCM services. Community members who are affiliated to CBHI pay 200 RWF and those who are not pay 500 RWF. CHWs report the total amount of fees collected at the end of each month in the SISCOP reports. The cell coordinators are responsible for collecting the fees from CHWs and remit them to HC. The SISCOP report provides a "debt incurred" and a "debt recovered" cell for patients who cannot afford paying immediately for the consultation.

The CBHI and PBF strategy has been thought as a combination. The development of CBHI has boosted the demand for health services. The PBF strategy addresses the increased demand by aiming at boosting the provision of health services.

⇒ **Supply of health materials and drugs**

The supply chain for community health commodities is fully integrated into the national supply chain system for health commodities. CHWs complete their stock cards and transmit them to their cell coordinators. Cell coordinators compile the needs in commodities and submit them to the HC. At the HC, the in-charge of CHWs/pharmacy verifies accuracy of the requisition forms. HCs order CHWs commodities to district pharmacies that also make requests from the central warehouse known as the Medical Procurement and Provision Division. Once the order is ready at District Pharmacy, it is distributed to HCs, where the in-charge of CHWs/pharmacy distributes the commodities to the cell coordinators or directly to the CHWs²⁵.

1.3.4. Logical framework (LF) of the CHP

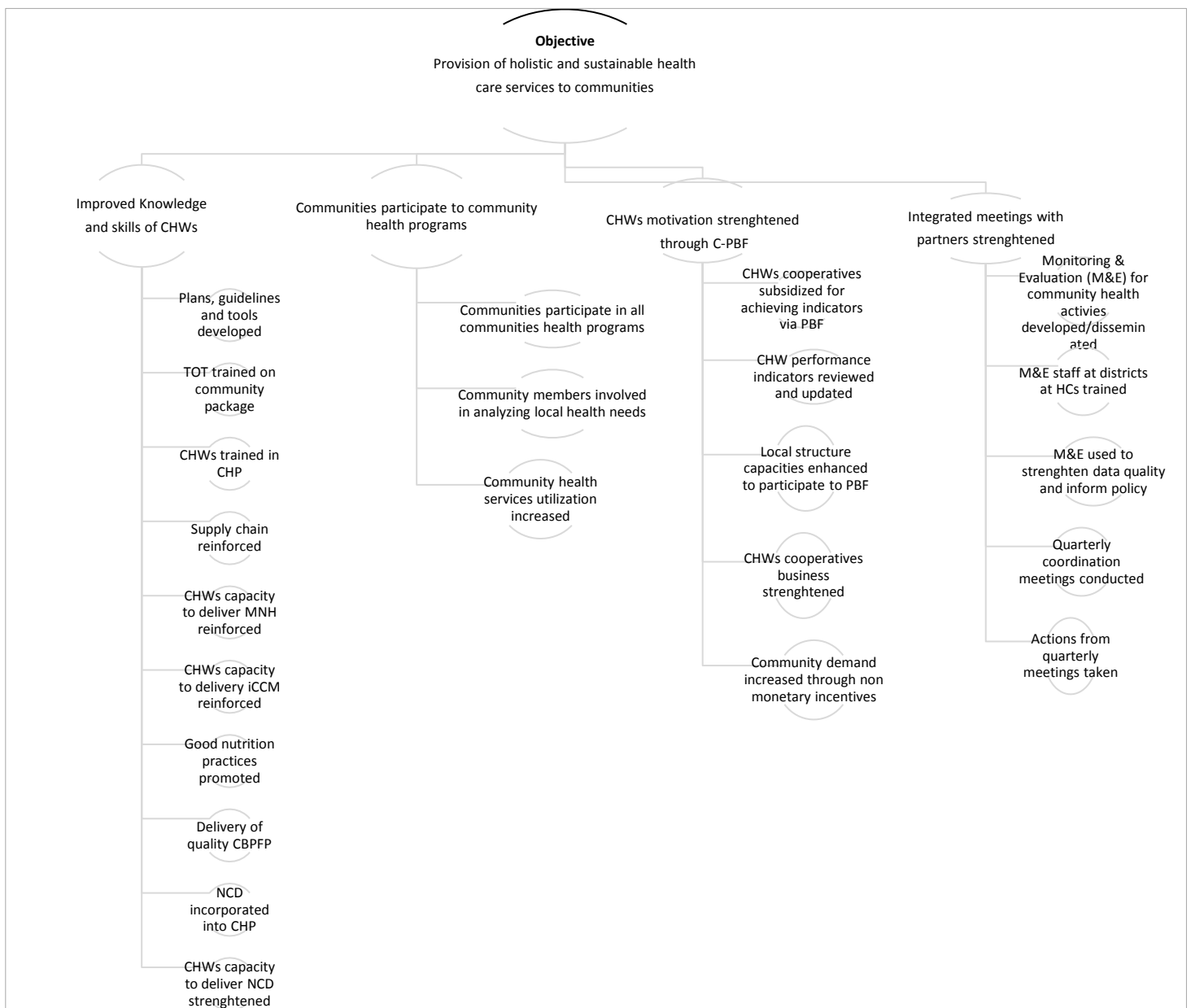
The CHP has a LF included in the National Strategic Plan for Community Health (2013-2018), but does not have any Theory of Change (ToC). One of the tasks of this evaluation was to support MoH and partners to develop one. The LF of the CHP is described in the CHSP. Such framework is built on the basis of the objectives of the CHP as set in the Policy and in the Strategic Plan, and it is structured therefore along four outcomes areas. A total of 23 outputs are identified against the four outcome areas; a total of 46 indicators are identified as a means to monitor progress in achieving the LF set outputs and outcomes. The structure of the logframe is summarised in **Figure 7**, drawing from the LF presented in full in the CHSP (Annex 5, page 56).

²³ MSH, 2016. *A comprehensive assessment of community health workers' cooperatives in Rwanda: final report*. Rwanda, Kigali.

²⁴ Nyandekwe, M., Nzayirambaho, M. & Kakoma, J.B. (2014) Universal health coverage in Rwanda: dream or reality. *Pan African Medical Journal*. 17 (232). Available from: <http://www.panafrican-med-journal.com/content/article/17/232/full/> [Accessed 25th February 2016]

²⁵ CHP Handbook (Draft), 2015.

Figure 7. Logical Framework of the CHP



Source: Adapted from National Strategic Plan for Community Health (2013-2018)

As previously mentioned, underpinning this logframe is a set of 46 indicators that are identified to monitor progress against outputs. To the best of our knowledge, no regular update and analysis of this body of indicators is performed at any level of the system. The logframe of the CHP is assessed more in detail later in this report, under Section 4.1. Relevance.

1.4. KEY STAKEHOLDERS INVOLVED IN THE CHP AND COORDINATION MECHANISMS

At central level, the CHP is coordinated by the Community Health Desk under RBC, which is the implementing arm under the MoH. This unit is responsible for overseeing planning, coordinating and monitoring all community health activities. The MoH remains responsible for policy and strategies development, technical guidance (protocols, tools) and capacity building. In order to facilitate the dialogue between the main stakeholders at central level (national institutions, representatives of civil society and development partners), a Maternal, Child and Community Health Technical Working Group (MCCH TWG) has been established, while an overarching Health Sector Working Group oversees the implementation of the sector-wide approach. Under this MCCH TWG, a community-health committee has been established including representatives of the MoH and development partners who meet monthly with the aim of coordinating activities of all partners, mobilising partner resources and developing guidelines and materials. This community-health committee reports to the MCCH TWG. Recommendations issued by the MCCH TWG are submitted to senior management for approval. In addition to this, the MoH has established a Single Project Implementation Unit which aims at reducing duplication work, the number of separate projects and the administrative burden of MoH in managing and reporting on the various projects²⁶.

At district level, the District Health Unit (DHU) and District Health Management Team (DHMT) coordinate the different actors of the health sector at the decentralised level. The DHU comprises a District Director of Health, technical assistants and M&E officers. The DHMT is composed of a Board of Directors (District Hospital Director, CHBI Director, District Pharmacy Director, HCs Titulaires representative, and District Health Director) that meet quarterly under the leadership of the Vice-Mayor in-charge of social-affairs. Both DHU and DHMT are responsible to oversee the planning, the implementation and the coordination of health activities in the district, and to provide local government with adequate information and technical expertise for evidence-based decision making. In addition, the Joint Action Development Forum gathers District Development Stakeholders (CSOs, NGOs, Development Partners, Private and Public sector and Local Government) on a quarterly basis to encourage inter-sectoral collaborative interventions and to avoid duplication and parallelism of activities²⁷.

The District Hospitals supervise the HCs and compile the needs in terms of materials and tools of CHWs and HCs, and make the request to central level as well as the distribution. In each district hospital, one person is in-charge of CHWs. This person coordinates training and supervision of community health activities in collaboration with the in-charge of CHW at HC. District hospitals organise monthly coordination meetings with titulaires and personnel in-charge of CHWs at HC.

HCs deliver services at sector level, which is the administrative level below the district, with at least one HC present in each sector. In each HC, one person is in-charge of CHWs and identify the needs of CHWs regarding training, medicines and commodities, tools and materials, as well as their distribution. He/she also ensures that the referral and counter-referral system between the CHWs and the HC is operating effectively. The HC organises monthly coordination meetings for CHWs. The person in-charge of CHWs at HC regularly liaises with the in-charge of social affairs at the administrative sector level to coordinate community interventions.

At cell level, which is the administrative level below the sector, the number of health posts has progressively increased with the aim of having a health post in each cell in order to bring primary health care closer to the community. However, at this stage, a limited number of public/private health posts have been set up and there is no established linkage between CHWs and health posts. At cell level, cell coordinators, usually one

²⁶ Rwanda Ministry of Health. 2015. *National Community Health Policy*. Kigali, Rwanda.

²⁷ Rwanda Ministry of Health. 2011. *The District Health System Re-organisation Guideline from a Managerial Perspective*. Kigali, Rwanda.

experienced binome and one experienced ASM, oversee CHWs activities within their cell. In addition to their activities of CHWs, they also supervise other CHWs, collect, verify and compile monthly reports from CHWs, and requisite medicines and commodities. They usually liaise with the executive cell committee to inform on the health situation.

At the umudugudu level, the lower administrative level, the CHWs deliver the services packages to the population of their village. They can liaise with the in-charge of social affairs at the umudugudu level and the executive village committee when they encounter a case that requires a social intervention. They can be part of the Community Hygiene Club/ Community Health Club although this is not in the attribution of their role. These health clubs are managed by the Community-Based Environmental Health Promotion Program.

2. EVALUATION PURPOSE, OBJECTIVES AND SCOPE

After 20 years of CHP implementation, the MoH in partnership with UNICEF has commissioned an independent evaluation of the CHP program.

It is envisaged that the evaluation, in combination with other studies, will guide the MoH on how to use CHWs most effectively to achieve national health goals, contributing to the achievement of post-2015 global sustainable development goals (SDGs).

In January 2016, the CMNH, at LSTM, was contracted to perform the independent evaluation of the CHP in Rwanda. The evaluation started in January 2016, and has been completed in November 2016.

2.1. PURPOSE AND OBJECTIVES OF THE EVALUATION

The **purpose** of the proposed mixed-methods evaluation, as per its Terms of Reference (ToR) (**Annex 1**), is to document the Rwanda CHP, assessing programmatic achievements and constraints by reviewing the existing conceptual framework and overall system, including financial support, human resources, management structure, supervision mechanism and governance.

The objective of the evaluation is to understand whether the CHW program has achieved its intended objectives, thus contributing to the overarching objectives defined in the HSSP III of improving the health status of the population by *“Ensuring universal accessibility of quality health services for all Rwandans”*²⁸.

The methodological design proposed for the evaluation is presented in the inception report for the evaluation (**Annex 2**), and was informed by:

- Key stakeholder interviews conducted at national level, from the 15th to the 19th of February 2016.
- Literature review of other CHP evaluations conducted in Africa.
- Mapping and analysis of studies, evaluations, assessments and reviews of the CHP available in Rwanda.
- Review of key MoH policy and planning documents designed to inform the health sector strategy in general, and the CHP in particular.

2.2. SCOPE OF THE EVALUATION

2.2.1. Subject of the evaluation

The ToR for the evaluation required an assessment of the CHP in Rwanda, and of its impact on MNCH.

A review of existing policy documents and interviews with key stakeholders performed at inception highlighted the need to clarify the central focus of the evaluation at inception, in terms of what is the subject to be evaluated, and of what is the central outcome measurement under evaluation.

Many factors and mechanisms are active at community level in Rwanda, and these are deployed and supported by either the MoH, NGOs, civil society organisations, or other line ministries.

²⁸ Government of Rwanda, Ministry of Health. Third HSSP July 2012-June 2018

Subject of the evaluation

This evaluation has focused on CHWs, who are selected, trained and deployed by the MoH to deliver a defined set of tasks at community level. CHWs are the central element of the Community Health Policy and of the CHSP of the MoH.

Other cadres and structures deployed at community level have been taken into account in the contextual analysis of coordination, division of labour and the relationship of CHWs with these cadres, but they have not constituted the central focus of the evaluation.

Outcome measures under evaluation

Although the CHP has been assessed as an integrated platform for the delivery of an integrated package of services at community level, the evaluation has maintained its focus on *maternal, newborn and child health*, as per initial Terms of Reference (**Annex 1**). Other services provided by CHWs were obviously taken into account as variables that affect caseload, service delivery, workload, supervision, and the overall management and delivery system of the CHP, but did not constitute a central element for measurement of impact and outcome variables of the evaluation.

The implementation of mechanisms of PBF mechanisms through CHWs cooperatives have been taken into account through the evaluation, as a variable potentially influencing the performance and motivation of the CHWs, and as core strategy set in place to ensure the sustainability of the program. Again though, the focus of the evaluation, as per ToRs, is on CHWs and not on the functioning and management of these cooperatives, and/or on the economic impact of the cooperatives on the CHWs.

Other studies have been conducted and/or are ongoing which focus on cooperatives, and evidence from such studies will be used to inform the evaluation analysis, in as far as this has been an influence on the role of CHWs.

2.2.2. Geographical scope

The evaluation has been designed to assess the program nationwide; therefore, the evaluation questions have been addressed at a national level.

For primary data collection, appropriate statistical methods were used to select a sample of the population under study that is representative of the entire country, for quantitative data collection methods. Purposive sampling was used for primary data collection of qualitative data.

2.2.3. Time period

The ToR for the study were initially designed to cover the period 1995-2015. As proposed in the inception report, however, the evaluation has limited the focus of the evaluation to the period 2005-2016.

Three main reasons justified this approach:

Relevance and usefulness - Assessing the CHP program from its start in 1995 may be useful to provide a descriptive documentation of the program history, evolution and results. It will be less useful for prospective policy making, since the political, social and economic context as well as the program features of mid-90s to 2005 may not be relevant to the actual country situation and needs.

Program content - Some key elements of the CHP were only introduced after 2005. Assessing the CHP before then would entail assessing a program that is significantly different in nature and content from today.

In particular:

- The c-PBF was introduced in 2008;
- iCCM was introduced in 2008;
- The CBNP was introduced in 2009;
- Community based provision of family planning was introduced in 2010;
- The community maternal and newborn health program was introduced in 2010;
- MCH week campaign and nutrition program were also introduced in this period.

Availability of data - Routine data is available through the Health Information System in Rwanda and is an essential source of information for the evaluation. Retrospective secondary data is available through HMIS and is limited by the following factors:

- The Community Health information system (SISCOM) was only introduced in 2010
- The Rapid SMS was also introduced in 2010, and was gradually scaled up and updated.

2.3. EVALUATION CRITERIA AND QUESTIONS

In line with the Organisation for Economic Cooperation and Development (OECD)/ Development Assistance Committee (DAC) criteria for international development evaluations²⁹, this study provides an independent assessment of the CHP in Rwanda against the following criteria: relevance, impact, effectiveness, efficiency and sustainability.

A set of evaluation questions were proposed by the MoH and UNICEF via initial ToRs, against these criteria. Assessing the relevance and feasibility of the proposed questions and then identifying suitable, solid methods to address them was the central focus of the inception phase. In light of the findings and recommendations of the Evaluability Assessment performed at inception, LSTM proposed a set of revised evaluation questions; these were approved by the Evaluation Steering Committee (ESC) in April 2016, and are presented below (**Table 4**).

Table 4. Evaluation criteria and evaluation questions

Evaluation Criteria	Evaluation Questions
Relevance <i>Extent to which the aid activity is suited to the priorities and policies of the target group, recipient and donor.</i>	EQ1 - Is the CHP consistent with national policies and plans? EQ2 - Is the CHP relevant to the needs and priorities of the community? How well is the CHP accepted and owned by the community?
Effectiveness <i>Extent to which an aid activity attains its objectives</i>	EQ3 - Has the CHP achieved its objectives? To what extent and how? EQ4 - What were the main facilitators and barriers to achieving the program objectives?
Efficiency <i>Measuring the outputs – qualitative and quantitative – in relation to the inputs</i>	EQ5 - What are the program costs and its main cost drivers? EQ6 - Are the available resources (financial, human and commodities) efficiently used to achieve the program objectives?
Impact <i>Positive and negative changes produced by a development</i>	EQ7 - Has the CHP contributed to improve the health status of women, newborn and children in Rwanda, by increasing coverage of evidence based, high impact maternal, newborn and child health interventions?

²⁹ Guidelines developed by the OECD/DAC Network for Development Evaluation (OECD/DAC 2010)

intervention, directly or indirectly, intended or unintended

Sustainability (and partnership)
Measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn. Projects need to be environmentally and financially sustainable.

EQ8 - What are the main factors influencing the future sustainability of the program (human, social, financial, institutional)?

EQ9 - To what extent and how are program results likely to be sustained in future (technically, institutionally and financially) and under which scenarios?

3. EVALUATION METHODOLOGY

3.1. METHODS

3.1.1. Principles

The United Nations Evaluation Group³⁰ (UNEG) has set norms and standards for evaluation of development programs; these were first designed in 2005, and recently updated in 2016.

LSTM has implemented this evaluation under the principles guiding the **LSTM Code of Practice for Research Conduct** to the research and evaluation, and in doing so the evaluation team has worked at its best to ensure that relevant UNEG norms and standards were respected throughout the whole process of design, implementation, reporting and dissemination of the findings.

The measures undertaken to meet relevant UNEG standards are summarised in **Table 5** below.

Table 5. Adherence of the Evaluation to UNEG standards

<i>UNEG standard</i>	<i>LSTM measures to meet standards</i>
Standard 3.1. Competencies	Pool of CVs submitted to UNICEF and MoH at proposal stage for approval; Team leader former UN staff member, and involved in other evaluation work for the UN in other countries; team constructed to present an overall balance of technical skills and of evaluation competencies.
Standard 3.2. Ethics	All relevant Ethics approvals obtained prior to data collection (LSTM REC; Rwanda National Ethic Committee (RNEC); National Institute of Statistics of Rwanda (NISR)); team involved in data collection trained in ethical principles; interaction with all stakeholders maintained regularly and respectfully at all stages of the evaluation.
Standard 4.1. Timeliness and intentionality	Intentionality: evaluation questions discussed via participatory workshops at inception with UNICEF; MoH and other stakeholders, and presented to Evaluation Steering Committee for approval. Timeliness: timeliness has been partially affected by the lengthy processes related to obtaining approvals for primary data collection, and for dissemination of survey results. At all stages, when delays were experienced, revised work plans and timelines have been shared with stakeholders and agreed.

³⁰ United National Evaluation Group (UNEG): Norms and Standards for Evaluation. June 2016.

Standard 4.2. Evaluability Assessment	Inception report based on initial, rapid Evaluability Assessment, and informed by interviews with key informants; preliminary analysis of data and reports; literature review.
Standard 4.3. Terms of reference	Purpose, scope, design and plan proposed by UNICEF/MoH were revised during inception phase. TORs were modified accordingly via inception report.
Standard 4.4. Evaluation Scope and Objectives	Scope and objectives presented via inception report.
Standard 4.5. Methodology	Overall evaluation design (theory based evaluation) presented via inception report. Methods to address evaluation questions also presented, highlighting scope of the analysis and limitations. Methods of data collection and analysis for both qualitative and quantitative research strictly followed quality standards for research.
Standard 4.6. Stakeholders engagement and reference groups	ESC set at the start of the evaluation. Key stakeholders regularly consulted through formal ESC meeting, workshops and training sessions, and regular communication.
Standard 4.7. Human rights approach and gender mainstreaming	Duty bearers involved in the evaluation during design (participatory workshop to design ToC and to refine data collection tools) and during data collection (communities; CHWs; health workers; donors; UN; civil society and other involved as key informants).
Standard 4.8. Selection of evaluation team	Core Team composition: more than 50% of women. Team diversity: team composed of more than five different nationalities. Participation of professionals from the country: two team members had lived in Rwanda for more than a decade. Firms subcontracted for data collection and for logistic services were both Rwandan.
Standard 4.9. Evaluation report and products	Evaluation report based on UNICEF guidelines (UNICEF adapted UNEG evaluation standard, 2010). Annotated outline of evaluation report submitted to UNICEF for approval prior to the production of the final report.
Standard 4.10 Recommendations	Internal peer review sessions and meetings were held within LSTM for quality assurance of the evaluation report and for discussion on recommendations. Report submitted in draft at various stages and to a large audience, to test consistency, clarity and feasibility of recommendations.
Standard 4.11 Communication and dissemination	Workshop planned for wide dissemination in Rwanda of evaluation findings Outline of papers included in evaluation report for approval from MoH Rwanda, in light of future publication in peer reviewed journals.

3.1.2. Evaluation Design

A theory-based approach was envisaged as the most suitable method to address the evaluation questions. Rather than addressing the traditional question ‘*To what extent can a specific net impact be attributed to the intervention?*’ a theory based evaluation aims at addressing the question of *whether the intervention has made a difference.*

In particular, *contribution analysis*³¹ is an analytical approach suited for studies that examine whether a program or policy has contributed to achieving certain results and impacts.

As suggested by Mayne, contribution analysis is useful in instances where it is impractical, inappropriate, or impossible to address the attribution question through an experimental evaluation design. In such cases, the evaluation question must be readdressed by focusing on the extent to which the evaluator can “build a case for reasonably inferring causality,” that is, the extent to which the intervention can be said to have contributed to a set of observed (positive or negative) outcomes.

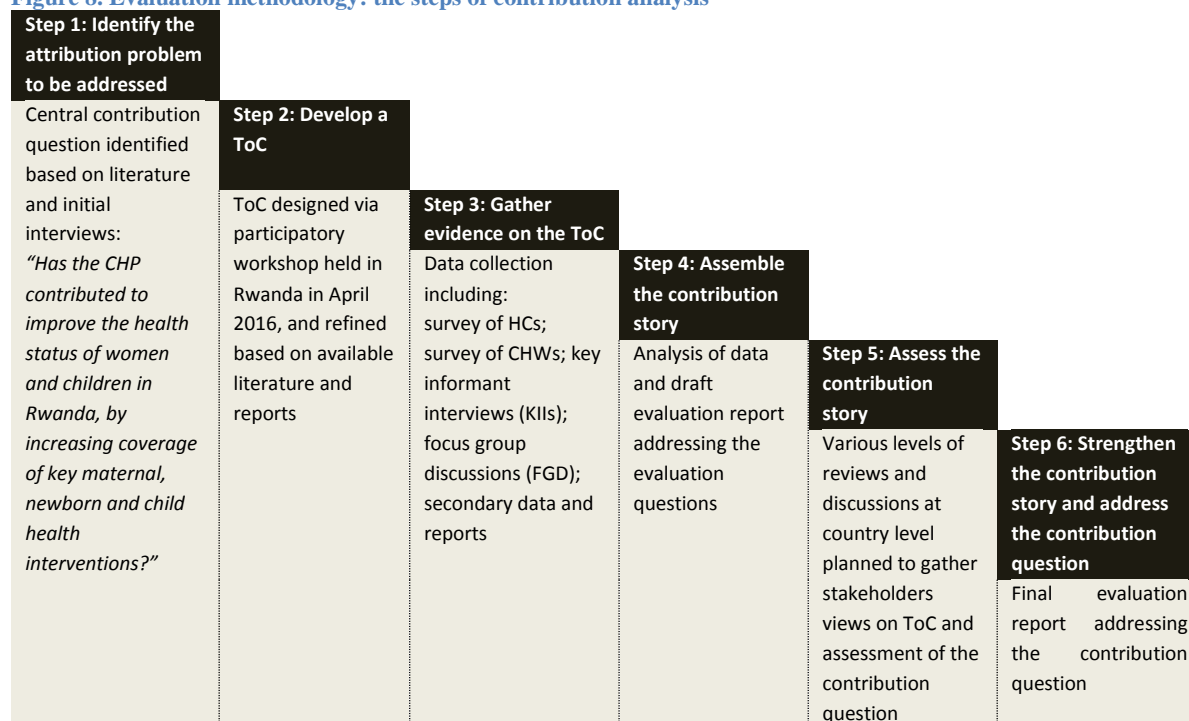
The basic assumption underlying contribution analysis is that causality (plausible attribution) can be derived from addressing the following:

- The program is based on a plausible and achievable ToC;
- ToC activities are implemented accordingly;
- The ToC can be validated by existing evidence;
- Evidence demonstrates that the chain of expected results has occurred and that other factors, including influencing factors and alternative explanations for achievements that influenced the program was assessed and their relative influence recognised.

The principles of *contribution analysis* were used as the underlying, guiding methods used to approach this evaluation. There are six iterative steps in contribution analysis.

These steps, described here below (**Figure 8**), were followed during the CHP evaluation.

Figure 8. Evaluation methodology: the steps of contribution analysis



³¹ Mayne, J. 2001. Addressing attribution through contribution analysis: using performance measures sensibly. Canadian Journal of Program Evaluation 16: 1-24

In summary, the evaluation relied primarily on the design of a ToC, and on the exercise of testing key assumptions of the ToC via various methods of data collection and analysis.

Underlying this overarching evaluation method, various specific analytical methods were identified to address the specific evaluation questions. These are presented in detail in the Evaluation Inception Report ([Annex 2](#)), and summarised in [Table 6](#).

To inform the contribution analysis, we used a mix of methods: a cross-sectional survey, Key Informants Interviews, Focus Group Discussions and review and analysis of secondary data, including a retrospective stepped wedge analysis of maternal and newborn health outcomes following the phased-manner implementation of CHWs services packages in the different districts.

Of note, all the methods of data collection and analysis proposed via inception report were consistently applied during the implementation of the evaluation. The only exception is the performance of a Lives Saved Tool (LiST) simulation, which was not performed as initially envisaged since it was judgement of the evaluators that such simulation would not add value to the robust body of findings already collected via other methods.

Table 6. Evaluation Framework

Evaluation criteria	Key evaluation questions	Evaluation method	Data Sources/Tools	Methods of analysis
Impact	<ul style="list-style-type: none"> Has the CHP contributed to improve the health status of women, newborn and children in Rwanda, by increasing coverage of evidence based, high impact MNCH interventions? 	<p>Contribution story of the CHP</p> <p>Assessment of attributable fraction of change in coverage for selected interventions</p>	<p>ToC</p> <p>HMIS SISCOM Program timeline (MoH)</p>	<p>Contribution analysis</p> <p>Retrospective stepped wedge analysis of MNH interventions</p>
Relevance	<ul style="list-style-type: none"> Is the CHP consistent with national policies and plans? Is the CHP relevant to needs and priorities of the communities? How well is the CHP accepted and owned by the community? 	<p>Document review/descriptive analysis</p> <p>Narrative synthesis of emerging themes from qualitative research</p> <p>Analysis of LSTM survey results</p> <p>Analysis of epidemiologic profile</p>	<p>Program policy documents, reports, manuals, guidelines, protocols, tools</p> <p>KIIs and FGDs</p> <p>Qualitative studies on CHP available in Rwanda</p>	<p>Data triangulation</p> <p>Thematic framework analysis</p>
Effectiveness	<ul style="list-style-type: none"> Has the CHP achieved its objectives? To what extent and how? What were the main facilitators and barriers to achieving the program objectives? 	<p>Assessment of CHP indicators as defined through the Community Health Strategy Plan 2013-2018</p> <p>Narrative synthesis of emerging themes from qualitative research</p> <p>Analysis of LSTM survey results</p>	<p>HMIS SISCOM LSTM Survey</p> <p>KIIs and FGDs</p> <p>Qualitative studies on CHP</p>	<p>Analysis of progress of program indicators against defined targets, and from baseline</p> <p>Thematic framework analysis</p>
Efficiency:	<ul style="list-style-type: none"> What are the program costs and its main cost drivers? Are the available resources (financial, human and commodities) used efficiently to achieve the program objectives? 	<p>Descriptive analysis of program costs</p> <p>Qualitative assessment of efficiency gaps</p> <p>Analysis of secondary data (HMIS, SISCOM)</p> <p>Analysis of LSTM survey results</p>	<p>Management Sciences for Health (MSH) study on costing (2016)</p>	<p>Analysis of variance of standard vs actual costs</p> <p>Descriptive Analysis of efficiency indicators</p> <p>Comparison with benchmarks</p>
Sustainability:	<ul style="list-style-type: none"> What are the main factors influencing the sustainability of the program in future (human, social, financial, institutional)? To what extent and how are program results likely to be sustained in future technically, institutionally and financially) and under which scenarios? 	<p>Descriptive Synthesis of barriers and facilitators to sustainability, in its aspects of: program design and management; community fit; integration with broader environment</p> <p>Scenarios for optimisation of the program in terms of design, effectiveness, efficiency</p>	<p>All used in evaluation</p> <p>All used in evaluation</p>	<p>Narrative synthesis</p> <p>Comparison with models/strategies used in other contexts/countries</p>

3.2. PRIMARY DATA SOURCES

3.2.1. Survey of Health Facilities and of CHWs

A cross sectional survey was conducted at health facilities and at community level, as a key component of data collection for this evaluation. The key features of the survey are presented below; the full survey report is available in [Annex 5](#).

Survey objectives

The objective of the survey was to generate evidence concerning the CHP in Rwanda, assessing in particular critical aspects of the program that informed the assessment of evaluation questions related to relevance, effectiveness, and efficiency of the program.

The survey has been performed at both CHWs and HCs level.

At CHWs level, the survey was designed to cover the following aspects of the program:

- 1) Socio-demographic background of CHWs
- 2) Recruitment
- 3) Training
- 4) Scope of practice and service delivery
- 5) Workload
- 6) Supervision and coordination
- 7) Recording and reporting activities
- 8) Equipment and supplies
- 9) Referral
- 10) Motivation

At HC level, the survey aimed at collecting general data on three main aspects related to the CHP:

- 1) Density of health workers involved in community health, population of CHWs covered and coordination mechanism regarding the CHP;
- 2) Information about the HC staff in-charge of CHWs, including: training, workload, practice and supervision aspects;
- 3) Availability of equipment, health products and medicines for CHWs at HC level.

Survey design

The study site for the survey was Rwanda, nationwide.

The study population was defined as all active CHWs and all public HCs with attached CHWs in Rwanda. By active, we meant CHWs who had not resigned or defaulted. The sampling frame was provided by the RapidSMS database (at the date of June 2016) provided by the Community Health Unit (CHU).

LSTM designed the questionnaire for CHWs and HCs, based on the *LQAS Generic Community Health Worker Survey Tools (LSTM, UNICEF; 2015)*, which was considerably expanded and adapted to the context of Rwanda and to the objectives of the evaluation. Tools were then refined during a workshop in Bugesera, the 4th and 5th of April 2016, gathering inputs from stakeholders from CHU of RBC, United Nations Agencies technical staff, directors of district hospitals, CHWs supervisors at district hospital, district pharmacy manager, titulaires of HCs, and in-charge of CHWs at HC.

Sampling design

LSTM used a multi-stage stratified cluster random sampling approach to the survey.

The sampling design for the survey entailed:

- a) Random sampling of 10 out of 30 districts stratified by province: two districts per province, sampled using probability proportional to size (number of HCs).
- b) Random sampling of 80 HCs: eight HCs per district, sampled using probability proportional to size (number of CHWs attached to HC).
- c) Simple random sampling of 400 villages: five villages in the coverage area of each HC.
- d) Simple random sampling of 400 CHWs (160 ASMs and 240 Binômes): simple random sampling of one ASM in the two first villages, and simple random sampling of one Binôme in the three other villages in the coverage of each HC area.

This sample size has been determined to provide national estimates for CHWs and HCs characteristics, with margins of error that will not exceed 11.5% and 13.1% respectively, using 95% confidence levels if intra-cluster correlation coefficients do not exceed 0.10.

In order to anticipate the possibility of CHWs declining to participate in the survey, in each of the 80 HCs catchment area, we randomly sampled five other villages. Then we randomly sampled one ASM in the first two villages and one Binôme in the three other villages. In total, we randomly sampled 400 “replacement” CHWs.

Implementation

Ethical approval for the evaluation was obtained from the LSTM Research Ethics Committee and from the RNEC.

Consequently, a Visa was also sought and obtained from the National Institute of Statistics of Rwanda, as per national requirements. LSTM received NISR approval to conduct the survey the 27th of June 2016.

Data collection was carried out over a period of 2.5 weeks between August 22nd and September 6th 2016. Five districts were covered in week one, the additional five districts were covered in week two, and ‘mop-up’ of missing interviews was carried out in the first few days of the third week.

Data collection was carried out in 10 Districts in five Provinces in Rwanda: Kigali City (Kicukiro, Gasabo); Eastern Province (Kayonza, Nyagatare); Northern Province (Gicumbi, Rulindo); Western Province (Nyabihu, Ngororero) and Southern Province (Muhanga, Ruhango). In each District, interviews were carried out at eight HCs, and with CHWs in the catchment areas of those 8 HCs.

A local survey company, Laterite Inc., was contracted to implement the survey. LSTM was responsible for designing the tools, for training the data collectors and for supervising the data collection, and then for data analysis. Electronic data collection was used to perform the survey at both HC and CHWs level.

Analysis

Electronic data was received in real time. Following quality control and data cleaning, data were imported into Stata version 14, and analyzed according to a predefined analysis plan. A full report was produced, and submitted to NISR for review and final approval.

3.2.2. KIIs and FGDs

Qualitative research was part of the methods used for the evaluation. A full, stand-alone report of the key findings of our qualitative evaluation is presented in [Annex 6](#).

Objectives

The aim of the evaluation of the CHP in Rwanda is to gain an in-depth understanding of the CHP progresses and challenges, and to identify areas of improvement as well as success factors.

Implementation

KIIs and FGDs were conducted in August and September 2016 to collect the views and perspectives of stakeholders at various levels of the community health system. The RNEC, the NISR, the Ministry of Health and RBC granted approvals to access potential respondents for KIIs and FGDs. Permission to access the local authorities at district, sector, cell and village levels were also obtained from relevant authorities.

KIIs were undertaken with different levels of the system: national policy makers and stakeholders, directors and managers of health services at local/district level, health workers, and supervisors from the community level. KIIs were conducted by LSTM team members, following semi-structured topic guides; translators were used to support the interview process where needed. In total, LSTM interviewed 56 Key informants at central, district, sector and cell level (**Table 7**). The KIIs and FGDs at district, sector and cell levels were conducted in four districts (Kayonza, Kicukiro, Gicumbi, and Ngororero).

Table 7: Key informants interviewed by LSTM

Level	Stakeholders	Nb. of interviews
Central	MoH, RBC, other ministries, academics, donor agencies, (I)NGOs, Civil society organisations	24
District	Vice-mayor of Social-Affairs Director of District Hospital, CHWs supervisor at District Hospital Director of District Pharmacy (I)NGO director or program manager	20
Sector	Executive Secretary or in-charge of social affairs (ASOC) Titulaires or in-charge of CHWs	8
Cell	CHWs cell coordinator	4

FGDs were conducted with three categories of participants: female community members, male community members and CHWs. To ensure a variety of experiences were gathered, LSTM purposively selected areas where to conduct FGDs: the urban area of two HCs in Kayonza district (district in the Eastern Province in which health indicators are lower); the urban area of two HCs in Kicukiro district (district in Kigali region in which health indicators are higher); rural area of two HCs in Ngororero (district in Western Province in which health indicators are lower) and rural areas of two HCs in Gicumbi district (district in Northern Province in which health indicators are higher). These four districts are part of the 10 districts where LSTM conducted the survey so that quantitative and qualitative data could be triangulated. Urban and rural areas of each HC were defined using Rwanda Census 2012 and ArcGIS software.

Topic guides were developed for each FGD and KII category and these were pilot-tested with non-participating respondents and further refined before use. Purposive sampling was used to identify and recruit male and female community members, as well as CHWs, following the criteria described in **Table 8**. Participants of a same FGD could not be resident of a same village. CHWs must have been recruited at least 12 months before the FGD is held and could not be cell coordinators.

Table 8: Selection criteria for male and female community members for FGDs

FGD group	Inclusion criteria	Additional inclusion criteria for consideration
Women of reproductive age	3 pregnant women: - 1 who lives far away from HC - 1 who lives half way to HC - 1 who lives close to HC	Including: - 1 pregnant adolescent aged 15-19 - 1 woman pregnant for the first time - 1 pregnant woman who has another child(ren)
	3 lactating mothers: - 1 who lives far away from HC - 1 who lives half way to HC - 1 who lives close to HC	Including: - 1 adolescent mother aged 15 to 19 years - 1 Woman nursing an infant for the first time - 1 woman who has nursed another child(ren).
	3 mothers of under-5 child: - 1 who lives far away from HC - 1 who lives half way to HC - 1 who lives close to HC	Including: - 1 adolescent mother 15 to 19 years - 1 woman caring for an under-5 child for the first time - 1 woman who has previous experience caring for the under-5 child(ren).
	3 additional participants using a combination of any of the above selection criteria	
Men (aged 15-49)	3 men who live far away from HC	Including: - 1 youth (Father) aged 15 -24 years - 1 father of an under-5 child with other carers apart from parents i.e. Social support from family and friends - Father of an under-5 child with no other carer asides parents i.e. limited social support
	3 men who live half way to HC	Including: - 1 youth (father) aged 15 -24 years - 1 father of an under-5 child with other carers apart from parents - 1 father of an under-5 child with no other carer asides parents i.e. with limited social support
	3 men who live close to HC	Including: - 1 youth (father) aged 15 -24 years - 1 father of an under-5 child with other carers apart from parents - 1 father of under-5 child with no other carer asides parents i.e. with limited social support
	3 additional participants using a combination of any of the above selection criteria	
CHWs	4 male binomes: - 1 who live close to HC - 2 who live half-way to HC - 1 who live far from HC	Including: - 1 with less than 3 years of experience - 1 between 3 and 6 years of experience - 1 with more than 6 years of experience
	3 female binomes: - 1 who live close to HC - 1 who live half-way to HC - 1 who live far from HC	Including: - 1 with less than 3 years of experience - 1with between 3 and 6 years of experience - 1 with more than 6 years of experience
	5 ASMs: - 1 who live close to HC - 1 who live half-way to HC - 1 who live far from HC	Including: - 1 with less than 3 years of experience - 1 with between 3 and 6 years of experience - 1 with more than 6 years of experience

The focus groups were composed of 7-12 participants and were conducted by experienced and trained facilitators from the Rwandan-based firm Laterite. In total, four FGDs were held with 40 community women, four FGDs were held with 45 community men, and four FGDs were conducted with 44 male and female CHWs.

Analysis

All data was managed in accordance with LSTM internal data management policy and protocols.

All transcribed FGDs and KIIs material were analyzed thematically. Recordings were transcribed into Word documents, and Excel was used to manage data according to the codes and categories identified. We have used an inductive approach in data analysis. Data was initially coded using open codes and compared against the evaluation framework.³² After construction of a preliminary coding scheme, each code was examined in detail and further refined into categories. Through discussion in a multi-disciplinary team, we re-grouped categories into key themes based on directed content analysis of Hsieh and Shannon (2005) and guided by the evaluation framework.³³

3.3. SECONDARY DATA SOURCES

The main secondary data sources used for the evaluation included:

- **Literature review** – a literature review of reviews/evaluations of CHWs programs in Africa was conducted at inception. The review was used to inform the evaluation approach and methodology, as well as to inform stakeholders of best practices and case scenarios from other countries.
- **National surveys** (Demographic Health Survey (DHS) and Multiple Indicator Cluster Survey) – data from national surveys, including the recent DHS 2014-15, were analysed where relevant to perform historical trends analysis of interventions coverage, prevalence of disease and mortality.
- **HMIS/CHWs routine data (SISCOM and Rapid SMS)** - National vital statistics and routine data, and reports available via HMIS, and including the performance of CHWs, were used for the evaluation. This included data on numbers, distribution and characteristics of CHWs (sex, age, education level, marital status, years in service/date of appointment). A Data Confidentiality Agreement has been signed between LSTM and the Rwanda Biomedical Centre, and its conditions were strictly abided to throughout the process of access; use; and dissemination of secondary data for the evaluation.
- **National policies and plans** – National policies and Plans (e.g. HSSP III) have been analysed in detail, to assess the relevance and coherence of the CHWs program with the national health strategy, but also to benchmark survey results with defined performance or process-related benchmarks for the program.
- **MoH performance review reports**, where applicable; UNICEF reports; other reports, studies, evaluations, assessments and reviews conducted in the countries

Available documentation and reports were classified and used for desk-based review and analysis. A list of all the documents accessed for this evaluation is presented in **Annex 7**.

³² Ritchie, J., Lewis, J., Nicholls, C. M., & Ormston, R. (2013). *Qualitative research practice: A guide for social science students and researchers*: Sage, p. 201.

³³Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qual Health Res*, 15(9), 1277-1288. doi:10.1177/1049732305276687

3.4. IMPLEMENTATION ARRANGEMENTS

3.4.1. The evaluation function: roles and responsibilities

Contractual arrangements

In January 2016, CMNH at LSTM was contracted to perform an independent evaluation of the CHP in Rwanda. Initially, the timeline set for the evaluation was January to July, 2016.

The terms and conditions of the evaluation are regulated by the Service Contract No. 43191618, signed between UNICEF and LSTM in January 2016.

Such contract was amended during the course of the evaluation, to formalise the extension of the work until end December 2016.

The reasons of the no cost extension, formally documented via a request submitted to UNICEF and approved, were primarily related to the time needed to obtain approvals from RNEC and NISR, prior to data collection.

Roles and Responsibilities

MoH/RBC were the key stakeholders of the evaluation. In particular, the Community Health Desk was the primary focal point during the evaluation work and supported the process throughout the exercise. It is expected that MoH/RBC will lead on the management response that will follow the dissemination of findings and the review/acceptance (or not) of recommendations.

UNICEF - besides providing technical assistance to MoH/RBC in designing the initial ToRs for the evaluation, UNICEF had the responsibility of managing the contractual arrangements with an external service provider (LSTM), selected via a competitive tendering process to deliver the evaluation. Also, funding for this evaluation was made available thanks to UNICEF. Throughout the evaluation process, the UNICEF Office provided continuous support in coordinating and facilitating the evaluation activities, and technical inputs during various stages of the work.

Steering Committee – an ESC was established and tasked to provide oversight, guidance and overall steering of the evaluation. The ESC composition allowed for representation of a broad range of stakeholders, including MoH/RBC officials and managers; UN Agencies; Donors; NGOs. Approval from the ESC was sought at each stage of the evaluation.

LSTM had the responsibility of implementing the evaluation. In doing so, LSTM was contractually accountable to UNICEF, and technically accountable to the Evaluation Steering Committee.

3.4.2. Evaluation team

LSTM selected a multi-disciplinary team that combined: sound expertise in thematic areas that are relevant for this evaluation; sound research capacity; presence of French-speaking team members; knowledge of the Rwandan context. Various team members were involved at different stages of the evaluation.

The team was comprised of the following members:

Mr. Luigi D’Aquino – Team Leader

Mrs. Audrey Mahieu – Evaluation coordinator

Mr. Michael Lijdsman – Quantitative and qualitative research

Dr. Lizet Boestra – Quantitative and qualitative research

Dr. Abimbola Olaniran – Literature review

Dr. Helen Smith – Qualitative Research (training; design and analysis)
Dr. Thidar Pyone – Qualitative Research (data collection and analysis)
Ms. Juliet Relihan – Quantitative Research (training; supervision; data cleaning)
Mrs. Margaret Caffrey – Literature review
Dr. Sarah White – Statistical analysis of quantitative data

Additional specialists at LSTM-CMNH collaborated to the final evaluation, including: Dr Barbara Madaj in the research design; Mrs Mary-Jo Hoare in the design of the survey questionnaire; Miss Caroline Hercod in the editing and formatting of reports; Mrs Victoria Coakley in program management; Mr. Timothy Garner in administration, and Mr. Nik Cooper in logistics.

3.4.3. Implementing partners

During the inception phase, LSTM identified and selected local companies to provide support in the aspects related to data collection (quantitative and qualitative), and in the logistic and administrative arrangements of the evaluation. The selection process followed LSTM procurement rules; formal approval was sought and obtained from UNICEF prior to subcontracting partners.

Data Collection Company

During the inception phase, LSTM invited four local data collection companies to submit technical proposals and financial offers for the delivery of data collection in Rwanda, including both qualitative and quantitative research. Offers were received from four companies and analysed and scored independently by the members of an internal LSTM procurement committee. The company Laterite Ltd. was subcontracted to perform data collection, following the approval of the inception report from the Steering Committee. Laterite has been based in Kigali since 2010 and has established itself as a leading development research firm in Rwanda. The company has developed a strong understanding of the local context through strategic advisory projects for NGOs, multilateral organisations, companies, and government institutions. Laterite was responsible for the following activities:

Qualitative research: Laterite was in charge of implementing FGDs with community members and with CHWs. This entailed: selection of data collection teams; participation in the training of data collection teams; translation of topic guides in Kinyarwanda; participation in the piloting of FGDs tools; and translation and transcription of FGDs into English. Laterite was also in charge of providing transcriptions of the KIIs performed by the LSTM team.

Quantitative research: Laterite was in charge of translation of survey tools into Kinyarwanda; conversion of survey tools into electronic platform and upload on tablets; identification of survey teams; participation in training and to survey the pilot; planning and organisation of field work; delivery of the survey; support in quality assurance and data cleaning.

Administration and Logistic services in Rwanda

LSTM had not worked in Rwanda prior to this assignment. Therefore, since early planning stages we explored options to sub-contract logistics and administrative services, and identified HPA as the preferred organisation to support administration and logistics for the evaluation in Rwanda.

HPA has been working in Rwanda in health since 1998. The organisation currently works with Rwandan communities to provide safe water and sanitation facilities, tackle HIV and sexually transmitted diseases, to end violence against women, and to reduce poverty directly through income generation. LSTM and HPA have

partnered on previous occasions in various countries, sharing offices and logistics services. The proposed subcontract lies therefore on a consolidated model of partnership between the two organisations.

Approval to sub-contract HPA was sought from UNICEF and obtained prior to signing a subcontract.

3.4.4. Deliverables of the evaluation

The deliverables that we aim to provide are:

- **Inception report:** comprehensive report, including annexes and tools, reviewed and approved by the Steering Committee.
- **CHP ToC:** program ToC, including description of the process adopted to design it participatory, and a detailed description of key assumptions along the proposed ToC.
- **Survey of HCs and CHWs:** full survey report, approved by NISR, inclusive all data collection tools and of data sets.
- **Qualitative Evaluation report:** a full report presenting the key findings emerging from the analysis of KIIs and FGDs.
- **Articles:** outlines of four articles are produced and submitted to the MoH, to be considered for later submission and publication in open access journals.
- **Final evaluation report:** a final evaluation report, validated and approved, and comprising relevant annexes, a stand-alone executive summary and a stand-alone keynote presentation.
- **A final dissemination event:** to present the results of the evaluation to relevant authorities and to other stakeholders, and to discuss the key recommendations identified by the evaluation team.

As per contractual arrangements with UNICEF, the United Nations are entitled to all property rights with regard to the above referred deliverables.

3.5. ETHICAL CONSIDERATIONS

LSTM operates in accordance with the Helsinki declaration for medical research (World Medical Association 1964 and subsequent amendment 2013). Where applicable, proposals are subjected to review and approval of the LSTM Research Ethics Committee and in-country research ethics bodies to ensure the highest standards and quality of our work. All studies are implemented according to standard operating procedures with data collection activities planned and conducted in cooperation with local partners, in line with local requirements. As part of the research conduct, the principle of minimising harm to participants is a guiding one in our studies. Informed consent is sought with voluntary participation and right to withdraw guaranteed to all participants. Use of data is restricted to agreed purposes, and data management practices are based on set standards (including with regard to integrity, transparency and clarity).

In line with such principles, the following measures were adopted for the implementation of the evaluation in Rwanda:

Prior to implementing data collection:

Ethical approval for the evaluation was obtained from the LSTM Research and Ethics Committee, and from the RNEC. This applied to both qualitative and quantitative research. Consequently, a visa was also sought and obtained from the NISR, as per national requirements.

Data collection:

Information sheets and consent forms were designed, both in English and Kinyarwanda, and validated by RNEC prior to the implementation of data collection work. During fieldwork, all participants received explanations prior to data collection, and were given the full right of withdrawing from the exercise at any time. Consent was obtained prior to initiating the survey from all participants.

Data analysis:

All data has been managed in accordance with the LSTM internal data management policy and protocols, and every effort has been made to ensure that confidentiality and privacy of respondents is protected at all stages of data collection and processing.

For the survey: the questionnaires were electronically recorded and sent to the Laterite Ltd. server and then to the LSTM team in Liverpool under the format of raw data. All data collected have been kept strictly confidential, and access was only granted to the research team. Data stored on the tablets have been deleted at the end of data collection. Data has been used for statistical analysis only and identity information of the participants (name, district, HC and village) have been numerically coded to maintain anonymity. Only the research team has access to the link-matching identity information and coded numbers. Should the survey findings lead to any publication in future, data will be presented only on an aggregate form so that no HCs or individuals could be identified.

For FGDs and KIIs: the primary ethical concern in this evaluation was protecting the confidentiality of the KIIs and FGD participants, e.g. potential leakage of information discussed during the FGDs. Participants in the communities might feel that their views and responses could affect the quality of health care they receive from CHWs. In order to minimise potential breaches of confidentiality, KIIs and FGDs transcripts were anonymised and only research team accessed the transcripts. Recordings of KIIs and FGDs will be destroyed five years after the end the assignment.

3.6. LIMITATIONS

The limitations of the evaluation design were presented through the inception report, where the overarching evaluation design and the specific methods of data collection and analysis are described in detail, and so are the related limitations.

These are summarised here below (Table 9).

Table 9. Limitations of the Evaluation design and mitigation measures

Limitations	Description	Mitigation measures where relevant
Limitations related to the evaluation design		
Attribution/ Contribution	The evaluation is not designed to attribute a net impact of change in outcomes to the CHP	Contribution analysis was identified as a suitable method to address the evaluation questions. This was presented to the Steering Committee, proposed in the Inception Report and approved.

Limitations	Description	Mitigation measures where relevant
Focus of the evaluation (Subject)	<p>CHWs are the central element of the Community Health Policy and of the CHSP of the MoH, and they will be the core subject of the evaluation.</p> <p>The focus of the evaluation has been on CHWs and not on the functioning and management of cooperatives and PBF, and/or on the economic impact of the cooperatives on the CHWs.</p>	<p>The implementation of mechanisms of PBF mechanisms through CHWs cooperatives were taken into account through the evaluation, as a variable potentially influencing the performance and motivation of the CHWs, and as core strategy set in place to ensure the sustainability of the program.</p>
Focus of the evaluation (Outcomes)	<p>The evaluation looked at the CHP as a comprehensive platform for service delivery, rather than at individual programs.</p> <p>That said, the focus of the evaluation has been on <i>maternal, newborn and child health</i>, as per ToRs, and not on all programs, in terms of outcome measurement.</p>	<p>Other services provided by CHWs have been taken into account as variables that affect caseload, service delivery, workload, supervision, and the overall management and delivery system of the CHP, but have not constituted a central element for measurement of impact and outcome variables of the evaluation.</p>
Limitations related to specific methods of data collection and analysis		
Analysis of secondary data	<p>Secondary data was collected via SiSCOM, HMIS and Rapid SMS.</p> <p>This data was primarily used for two purposes: assessment of trends of service delivery from CHWs (and health facilities). And the performance of a retrospective stepped wedge analysis of the impact of c-MNH on health facility deliveries and on maternal and newborn mortality.</p> <p>Data was accessed via RBC, under a Confidentiality Agreement signed for the use of data. Whilst overall the quality of data was found to be good, an assessment of data quality was beyond the scope of this evaluation. Two main limitations were found:</p> <ul style="list-style-type: none"> - At times data trends (statistically analysed) presented variations between consecutive months which are impossible (for population data) or unusual (e.g. for deliveries). - Data for neonatal deaths could not be exploited as reporting increased substantially over the period. This resulted in an artificial rise of neonatal deaths for the numerator. 	<p>Limitations are taken into account in the retrospective stepped wedge analysis performed.</p> <p>Where possible, statistical methods were used to correct errors in trends of secondary data. Where not, outliers are flagged as a limitation of the study.</p> <p>Analysis to assess the contribution of c-MNH interventions on the neonatal mortality was not performed due to a substantial increase of the reporting of neonatal deaths.</p>
Qualitative Research	<p>The findings of the evaluation might have limited generalisability beyond its immediate locality as it included a limited number of stakeholders, interviewed at a specific stage. A number of limitations were associated with the qualitative research produced as a</p>	<p>By applying qualitative research methods such as KIIs and FGDs, the evaluation team sought to get in-depth information to answer evaluation questions. Generalisability is not the main goal of good qualitative research. We have used purposive sampling of “information-rich”</p>

Limitations	Description	Mitigation measures where relevant
	<p>component of this evaluation. These limitations and the related mitigations strategies are described in the Qualitative report (Annex 6)</p>	<p>participants to represent (not statistically) the broad types of informants relevant to our evaluation.</p> <p>Marshall (1996: 523) noted that <i>'...an appropriate sample size for qualitative study is one that adequately answers the research question'</i>.</p>
<p>Survey of CHWs and of Health Facilities</p>	<p>The Survey performed by LSTM was designed and approved to be significant at national level. This means that the sample was designed to provide estimates of means and proportions of CHWs and HCs characteristics with margins of error that would not exceed 11.5% and 13.1% respectively, using 95% confidence levels.</p> <p>(See Survey report in Annex for more details)</p>	<p>The survey design and sampling approach was discussed at length with the Steering Committee, and approved via inception report. In addition, approvals were sought from both RNEC and NISR in Rwanda prior to the survey. Following the survey implementation, and as per procedures, NIRS reviewed the survey report and provided the necessary authorisation before results were disclosed.</p> <p>In the report, confidence intervals are reported for all estimates, to allow the reader to assess the precision of the estimate.</p>

3.7. INTRODUCING A ToC APPROACH

3.7.1. Designing a ToC of the CHP

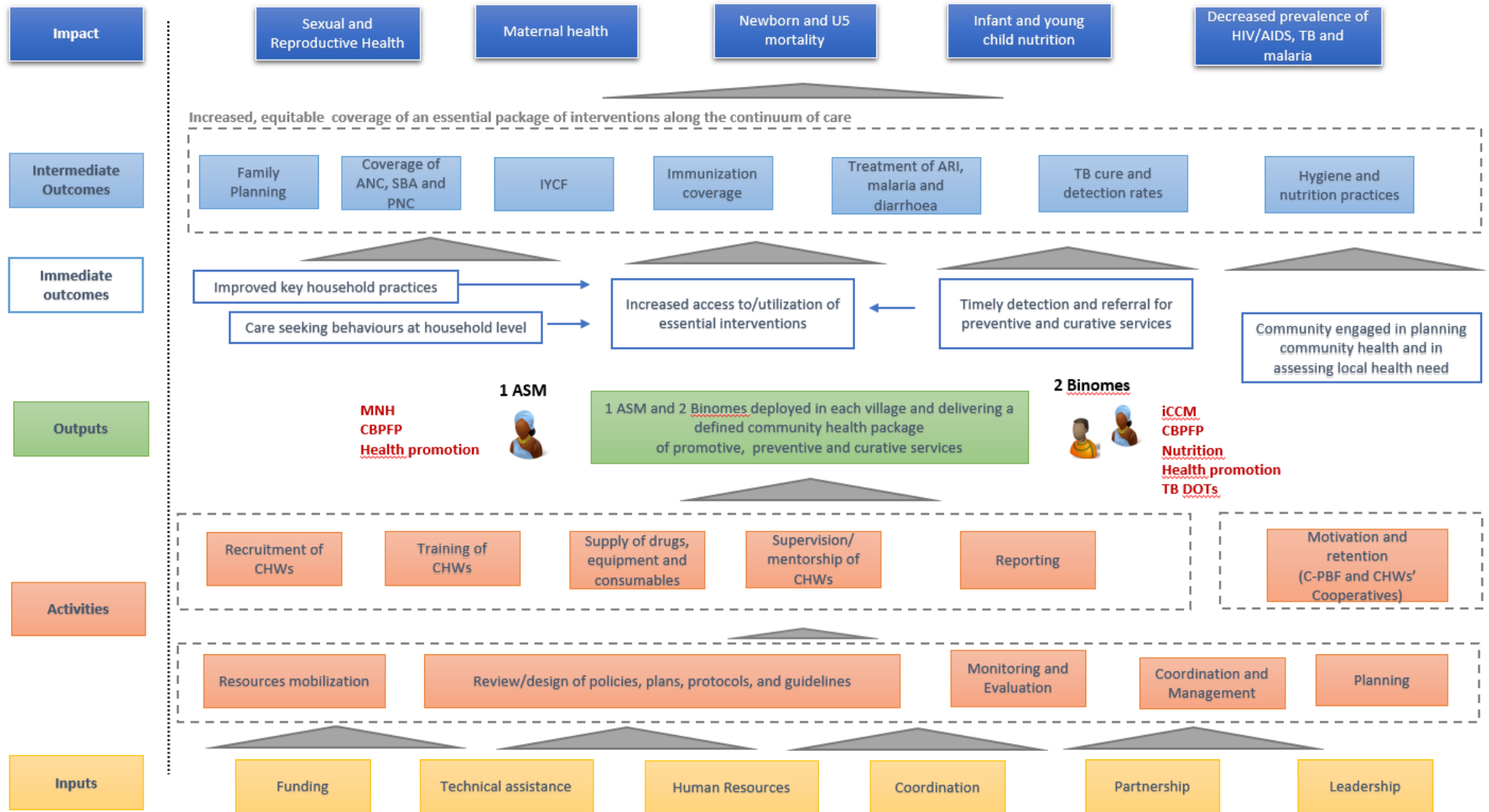
As previously explained in this report, ToC was central to our chosen evaluation methodology. During the inception phase, when a comprehensive literature review was performed, we could not identify a suitable example of a ToC for CHPs, from other countries. Based on a framework developed by Diaz et al³⁴, and on an initial review of literature and program documentation and regarding the CHP in Rwanda, the evaluation team drew a first, basic model of a possible ToC of the program. Such model was reviewed and refined in-house by the LSTM team after an initial set of more than 20 interviews performed in Rwanda in February 2016 (scoping visit, see Inception Report in **Annex 2** for details).

In April 2016, a workshop was convened in Rwanda (4th and 5th of April, Bugesera). The workshop, which saw the participation of stakeholders from MoH, RBC, UN agencies and other program partners, as well as of district and facility level health managers and providers, permitted to analyse and refine the initial ToC. As part of the exercise, key hypothesis (assumptions) and alternative explanations were identified at each step of the causal chain of results of the program. At the end of the exercise, an initial draft of the ToC was produced and the draft was further refined after the workshop. A final ToC – including a detailed presentation of key assumptions along the various levels of its result chain – is presented in **Annex 4**.

The ToC – which has then formed the basis of our assessment – is presented overleaf in **Figure 9**.

³⁴ Diaz, Guenther, Oliphant, Muñiz and the iCCM Symposium impact outcome evaluation thematic group. A proposed model to conduct process and outcome evaluations and implementation research of child health programs in Africa using iCCM as an example. Journal of Global Health, December 2014 Vol. 4 No. 2 • 020409

Figure 9. ToC of the CHP



3.7.2. Using the ToC to address the evaluation questions

Using ToC poses a legitimate question of how this assessment method links to the OECD/DAC criteria for evaluation, and hence to the nine specific evaluation questions agreed at inception.

Table 10. Answering evaluation questions using ToC

Evaluation criteria	Key evaluation questions	Level of ToC
Impact	<ul style="list-style-type: none"> Has the CHP contributed to improve the health status of women, newborn and children in Rwanda, by increasing coverage of evidence-based, high impact MNCH interventions? 	<p>Immediate outcomes → Intermediate outcomes</p> <p>Intermediate outcomes → Impact</p>
Relevance	<ul style="list-style-type: none"> Is the CHP consistent with national policies and plans? Is the CHP relevant to needs and priorities of the communities? How well is the CHP accepted and owned by the community? 	<p>Consistency of the overall ToC with policies and programs. Not specific to any level</p> <p>Output → Immediate outcomes</p>
Effectiveness	<ul style="list-style-type: none"> Has the CHP achieved its objectives? To what extent and how? What were the main facilitators and barriers to achieving the program objectives? 	<p>Output → Immediate outcomes</p> <p>Activities → Output</p>
Efficiency:	<ul style="list-style-type: none"> What are the program costs and its main cost drivers? Are the available resources (financial, human and commodities) used efficiently to achieve the program objectives? 	<p>Inputs → Activities</p> <p>Inputs → Activities</p>
Sustainability:	<ul style="list-style-type: none"> What are the main factors influencing the sustainability of the program in future (human, social, financial, institutional)? To what extent (and how) are program results likely to be sustained in future (technically, institutionally and financially) and under which scenarios? 	<p>External factors</p> <p>Not specific to any level of the ToC</p>

The findings of the evaluation report are presented as per OECD/DAC criteria and by evaluation questions. At each step, the report clarifies what level of ToC was assessed to address specific evaluation questions.

4. FINDINGS

4.1. RELEVANCE

EQ1 Is the CHP consistent with national policies and plans?

FINDING 1.1. THE CHP IS HIGHLY CONSISTENT WITH OVERARCHING NATIONAL POLICIES AND PLANS

A detailed description of the key policy documents informing the CHP has been presented earlier in this report (section 1.3.2).

Overall, the evaluation notes that there is a very **high relevance** of the CHP approach and priorities to the national development policies and plans, and to the national health strategy and policy.

- Overarching policy documents such as Vision 2020, EDPSR2 and the 7-years Government plan highlight the importance of community participation as a milestone for development in all sectors, and promote ownership of the CHPs.
- The HSSPIII identifies universal accessibility (geographical and financial) of quality health services for all Rwandans as its overarching objective. Four components are identified to achieve such objectives: programs; support systems; service delivery; governance. The CHP is referred to as one of the key elements of component three (service delivery).
- All the programs delivered at community level are within those identified as key priorities within HSSPIII for the entire health sector, under its component one (reproductive, maternal, newborn and child health (RMNCHN); HIV/AIDS; malaria; TB; mental health; Neglected Tropical Diseases; NCDs; health promotion; environmental health).
- The Community Health Policy and the CHSP are openly designed to fit within a broader national health vision, and to contribute to it through community health. The CHP is planned as an integrated platform of work rather than as a vertical program.
- The CHP was aligned to MDGs. Also, Rwanda is probably amongst the cases where the **shift to the new paradigm of Sustainable Development Goals has happened rapidly** in the public policy debate.

The Health Financing Sustainability Policy (MOH, 2015), does formulate recommendations for financial sustainability, although no specific recommendations for the CHP are made.

FINDING 1.2. THERE ARE SOME GAPS IN THE INTERNAL CONSISTENCY OF DOCUMENTS REGULATING THE CHP AT STRATEGIC LEVEL

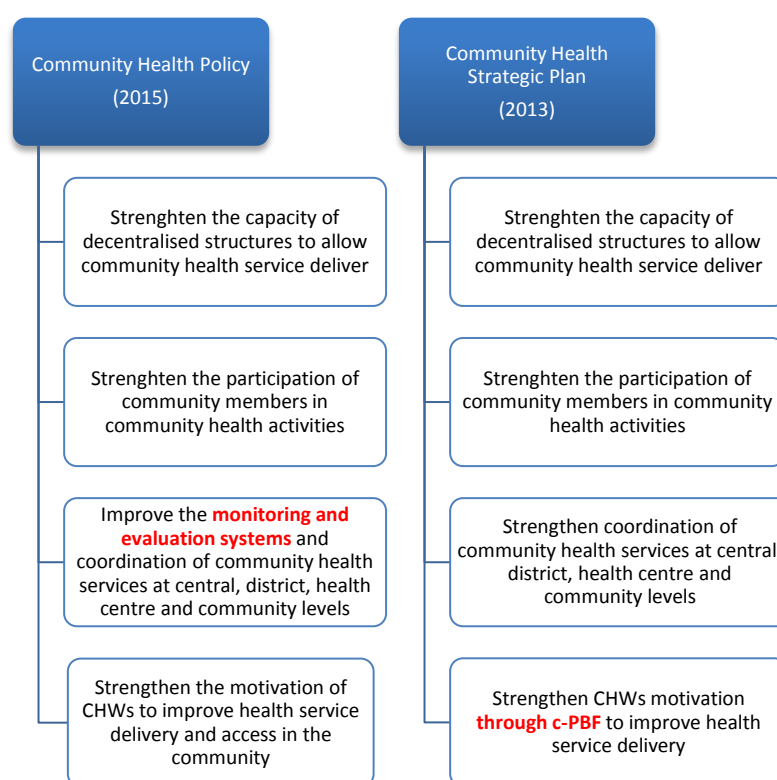
The package of community health interventions is well described in the community health policy and CHSP 2013-2018 in the individual program policies and strategic plans, and in program manuals/handbooks. Integrating and complementing these documents, thematic strategies for vertical programs are in place and define the 'content' that the CHP is tasked to deliver, in terms of services.

The evaluation notes the following areas of improvement in the set of regulating documents available at strategic level:

- The Community Health Policy was released in its updated version in 2015. The CHSP still dates 2013. As a consequence, there is a discrepancy in the way that the objectives are formulated in the two referral documents. This is illustrated in **Figure 10** below, which presents the objectives as spelled in the two documents (difference in red). Although these differences might seem minimal, they highlight two key issues that need harmonisation:

- The new Community Health Policy openly introduces M&E as a core objective, making reference to the concept of ‘capturing community activities at the community level’;
- In the new policy, the emphasis in motivation shifts from an exclusive focus on c-PBF to a broader range of motivational factors, listed in the Policy, including ‘innovative strategies for CHWs retention’ and ‘enhanced coordination with local leaders’ as key areas of action.

Figure 10. Community Health Policy and CHSPs: objectives



- The CHP Strategic Plan does not refer to all the programs currently implemented at community level. In fact, the Plan refers to a package of care comprising: iCCM; c-MNH; CBFPF; CBNP; NCDs and HIV/AIDS; Sexual and Gender-Based Violence; Community-based TB; and Community-based Mental Health. However, Adolescent Reproductive and sexual Health (ARSH) has been integrated since 2016 in the Community Health Division of RBC and interventions at community level are described in the National Adolescent Sexual Reproductive Health and Rights Strategic Plan (2011) but are currently not included in the CHSP.
-

FINDING 1.3. THERE ARE SOME GAPS IN THE INTERNAL CONSISTENCY AND COMPLETENESS OF DOCUMENTS REGULATING THE CHP AT OPERATIONAL LEVEL

All programs with community health interventions dispose training manuals and tools such as CHW guides/patient treatment protocols, drug order forms, stock carts, registers, referral and counter referral forms and BCC materiel. An integrated supervision tool, including the majority of programs has been elaborated. Most regulating documents are up to date.

Some of the gaps identified in assessing the package of documents regulating the CHP are reported below:

CHW Roles and responsibilities

The handbook for the CHP (Guide De Mise En Œuvre De La Santé Communautaire, MOH, 2007) provides a practical description of the implementation of the CHP service delivery package, but it is outdated. The Handbook of the CHP (June 2015, RBC (draft)) is updated and includes the more recent programs which have been added to the package, but it is still a **draft document and focuses mainly on the RMNCH programs in the CHU**.

The various programs that are not managed by the CHU have their respective, separate hand books/manuals, including:

- Community-based TB program (managed by the TB program of RBC and described in the TB Handbook (chapter 4 Community DOTs) and Community health module on TB)
- Community-based malaria interventions (long lasting insecticidal nets (LLIN) etc.) (managed by malaria division of RBC)
- Community-based HIV interventions (managed by HIV division RBC)
- Community-based Mental Health interventions (managed by mental health division of RBC)
- Community-based environmental health programs (managed by environmental health division of RBC).

Linkages between programs with community health interventions

No clear mechanisms between MCCH and other divisions with community health interventions (TB, HIV/AIDS, NCD, Mental health etc.) are described in the CHSP and CH handbooks. The CHSP contradicts itself on which division is in charge of coordination of training (CHU or NCD/HIV/AIDS Division) (chp 5.2.11). Also, except for the role of the HC and cell coordinator, there is no clear description of coordination mechanisms between the community health interventions carried out by binomes and ASMs (e.g. planning of BCC topics, etc.).

Staff in charge of the CHP at district and HC level

It is not officially documented how many staff are in charge on a national level in the CHU and other divisions with CH interventions. The community health supervisor at district hospital level, and in-chargeat HC level, seem to be insufficient to effectively coordinate and supervise the CHPS (2012-2018).

Training and development

Training topics and modalities are defined in the CH strategy and the CH handbooks (2007 and draft, 2015) and draft training guide for CHW's (2016)³⁵. However, the training curriculum in those documents only includes the CHU programs, excluding training on NCD, mental health and TB. In addition, it has not been defined how often the frequency of refresher trainings should take place and how the multiple various trainings can be integrated.

Indicators

The Log frame of the CHSP 2013-2018 has formulated its impact, outcome and output indicators, including a baseline for 2012 and targets for 2015 and 2018. The list includes indicators from HMIS, SISCOM and Rapid SMS. The CHU has a draft indicator list for HMIS, SISCOM and Rapid SMS indicators, of which some are the same as the indicators of the CHSP. It has included the program of ARSH, but doesn't include indicators of other programs such as NCD, TB.

Essential medical products and technologies

A detailed list of program supplies, equipment and tools is included in the CHSP, 2013-2018 (Annex 3: minimum package for CHWs). However, the CHP handbooks only contain a very limited list. The Rapid SMS system is an innovation for rapid reporting on MNCH emergencies and selected MNCH routine data. The Rapid SMS system

³⁵ Training guide for CHW's (RBC, 2016) (draft)

works on the principle that a phone transmits information into a computerised recording and response system (CHSP, 2013-2018). However, the CHSP doesn't describe the system in detail and how to respond to the replacement of phones, issues of internet connectivity, phone charges and charging of phone batteries.

Health Financing

The Health Financing Sustainability Policy (MOH, 2015) does formulate recommendations for financial sustainability, but no specific recommendations for the CHP are being made. A budget of the Community Health Plan 2013-2018 has been developed and is included in the plan, for the period of 5 years. Also, a resource tracking tool is managed by the RBC to map allocations to the program. Having said that, no comprehensive costing analysis of the CHP had been performed before 2016, when to complement this evaluation a Costing Study was commissioned by the Ministry of Health to Management Science for Health.

FINDING 1.4. THE LOGFRAME OF THE CHP PRESENTS SIGNIFICANT AREAS OF IMPROVEMENT

The CHP Strategic Plan presents a detailed LF, and related to that an M&E plan to measure indicators of progress against the framework. The LF, described earlier in this report (See [par. 1.3.4.](#)), is constructed upon four outcome areas; 23 outputs; and a total of 46 indicators.

The Evaluation notes the following issues related to the LF:

- **Impact level** - The LF is constructed against the objectives of the CHP. However, the LF does not clearly demonstrate which is the desired impact of the CHP, and how the results chain will lead to that.
- **Outcome level** – LF outcomes and related indicators are designed to address the CHP objectives. However, there is only limited consistency and correspondence between the CHP objectives 1 and 4 and the related identified outcomes. This is illustrated below:

CHP Objective	CHP outcome	Discrepancy
Strengthen the capacity of decentralised structures to allow community health service delivery.	Improved knowledge and skills of CHWs.	Strengthening the capacity of decentralised structures to deliver CH programs (<i>Objective 1</i>) goes beyond improving knowledge of CHWs to deliver services (<i>Outcome 1</i>). The outcome does not capture the scope of the CHP objective.
Strengthen the participation of community members in the community health activities.	Communities participate to community health programs.	-
Strengthen CHWs Motivation through c-PBF to improve health service delivery.	CHWs motivation strengthened through c-PBF.	-
Strengthen coordination of community health services at the central, districts, HCs and community levels.	Integrated meetings with partners strengthened.	Strengthening coordination of community health services (<i>Objective 4</i>) requires a systemic approach that goes beyond the mere strengthening of quarterly integrated meetings (<i>Outcome 4</i>). The identified outcome does not capture scope of the CHP objective.

- **Output level** – several issues are noted with regard to the construction of the outputs of the LF:
 - Some outputs are not consistent with their related outcome (e.g. Output 1.4. Supply Chain reinforced, which does not directly lead to its intended outcome 1, improved CHWs knowledge and skills)
 - Some outputs are duplicated (e.g. Output 2.1. and Output 1.10 are the same)

- **LF Indicators** – several issues are noted with regard to the construction of the indicators of the CHP LF. They are reported below:
 - *Adequateness of indicators vs LF structure*
All indicators of the plan are identified at output level. However, in various instances the indicators do not reflect outputs, but rather outcomes (e.g. % pregnant women receiving four or more ANC visits)

 - *Indicators Definitions*
A detailed definition of all indicators is missing. Whilst for some (SISCOM, HMIS) such definition can be drawn by relevant guidelines and manuals (Meta-dictionary), for others an exact formulation of the numerator and the denominators would not only be good practice, but it is essential to populate the framework (e.g. % of HCs reporting community stock outs: what is the timeframe of the indicator? What is the definition of stock out and the timeframe for its assessment?)

 - *Sources*
Sources are listed in the plan for most indicators. However, the sources noted in the plan refer to systems of data collection (e.g. SISCOM; HMIS; Reports; Survey) and remain unspecific. This does not allow to immediately link each indicator to a specific reference within such systems, nor to monitor whether the source is actually existing and is regularly updated (e.g. training reports; meeting reports). Also, in some instances sources are - to the best of our knowledge - incorrect (e.g. *the number of adult patients with mental health disorders referred for mental health care* presents SiSCOM as a source. Such an indicator is not currently collected via SISCOM. The example applies to many other indicators).

 - *Methods of construction of baseline and targets*
Baselines and targets are presented in the M&E framework. Yet neither the source of the baseline nor the methods used to construct targets are clarified in the plan.

 - *Frequency and level of data collection*
The frequency of data collection, as well as the level of collection and aggregation of the data for each indicator, are not specified in the plan. This undermines accountability and weakens the monitoring function since it leaves the issue of *who, where and when collects what* unanswered.

 - *Utilisation and management of the M&E framework*
The evaluation did not find evidence of a systematic use of the CHP M&E framework at any level of the system. In our opinion, this reflects not only the complexity of managing a plan of 46 indicators, but also the lack of harmonisation of such plan with regularly used systems

and tools (SISCOM, HMIS), and the lack of clarity about accountability for such plan and responsibility for using the plan as a management tool.

EQ2 Is the CHP relevant to the needs and priorities of the community? How well is the CHP accepted and owned by the community?

FINDING 2.1. THE CHP IS RELEVANT TO THE CURRENT COUNTRY EPIDEMIOLOGICAL PROFILE

As reported by the WHO in 2014, “The epidemiological profile of Rwanda is still dominated by communicable diseases, which constitute 90% of main complaints in health facilities. The most common causes of morbidity are diarrheal diseases, acute respiratory infections, HIV and AIDS, TB and malaria. Other diseases occur in the form of epidemics: typhus, cholera, measles and meningitis”³⁶. The leading causes of under-5 deaths are reported to be either related to neonatal conditions (44%), or to infectious diseases: Acute Respiratory Infections (ARI) (11%); diarrhoea (7%) and malaria (4%)³⁷.

Estimates of the global burden of disease for Rwanda confirm these statistics. The Global Burden of Disease, Injuries and Risk Factors Study 2010³⁸ reports the following: “Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In Rwanda, the top three causes of DALYs in 2010 were malaria, lower respiratory infections, and HIV/AIDS”. Clearly, the set of interventions delivered at community level by CHWs is fully aligned with the profile of burden of disease of Rwanda.

FINDING 2.2. PROSPECTIVELY, CHANGES IN THE COUNTRY EPIDEMIOLOGICAL PROFILE MAY REQUIRE A SHIFT IN THE FOCUS OF COMMUNITY-BASED HEALTH INTERVENTIONS

The Global Burden of Disease, Injuries and Risk Factors Study 2010³⁹ also present interesting data regarding the changing profile of the country, in terms of burden of disease, comparing 1990 to 2010.

In the graph below (**Figure 11**), the top 21 causes of DALYs are ranked from in order of the number of DALYs they contributed in 2000, and in 2015. Overall, NCDs and injuries (green and blue categories in Figure 11) are generally on the rise, while communicable, maternal, neonatal, and nutritional causes of DALYs are generally on the decline.

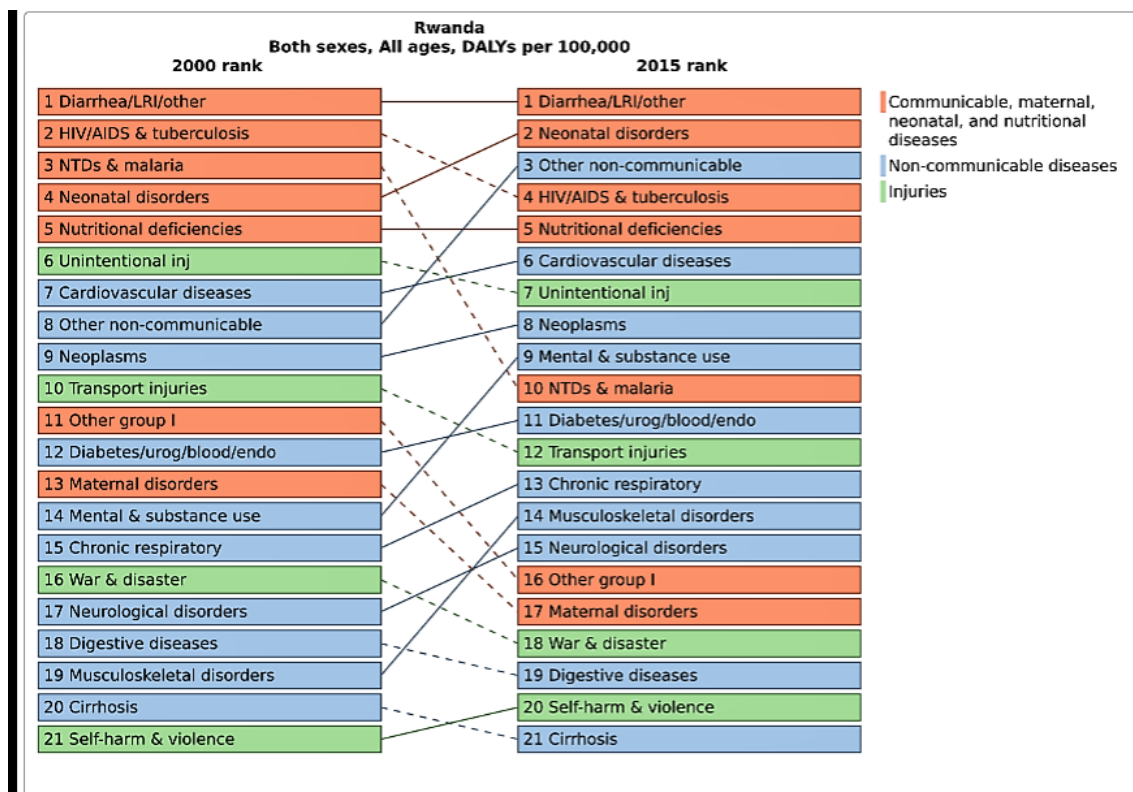
³⁶ Rwanda Country Cooperation Strategy. World Health Organization. 2014

³⁷ Countdown to 2015. The 2015 Report, Rwanda. Accessed at: http://www.countdown2015mnch.org/documents/2015Report/Rwanda_2015.pdf

³⁸ GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010. Institute for Health Metrics and Evaluation.

³⁹ GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS. Institute for Health Metrics and Evaluation.

Figure 11. Change in leading causes of DALYs, 2000-2015 (Institute for Health Metrics and Evaluation)



The release of a Non Communicable Diseases Policy in mid-2015 suggests that Rwanda is carefully looking at the issue of NCDs, as economic growth continues and life expectancy increases. As stated in such policy ‘*The success of the fight against infectious diseases highlighted the need to tackle the NCDs as the life expectancy has increased. Based on Rwanda’s HMIS data, over the period of January – December 2013 concerning top eight causes of morbidity in district hospitals, 2013, NCDs accounted for at least 51.86% of all District Hospital outpatients’ consultation and 22.3% of District Hospital hospitalisation (HMIS, 2013).*’

The extent and the speed at which the epidemiological profile of the country will change, will determine the relevance of the CHP both in terms of adequacy as a platform for service delivery, and of content of the package to be offered at community level.

Prospectively, the shift towards NCDs may require a profile of CHW which engages with a new and more complex set of activities, looking at adult population and at chronic diseases as the focus of work, which may be limited to prevention; promotion; patient care.

In fact, to address issues related to ageing population in Rwanda, the Rwanda MoH has already developed (October 2015) the concept of Home Based Care Practitioner Program, which entails recruiting secondary school graduates and training them through Technical Vocational Education and Training to provide palliative care at the community level. According to plans, these new recruits will be based at cell level and their deployment will be limited to the surroundings of nine Referral Hospitals in the first phase. This program is distinct from the CHP. Unlike CHWs, these new home-based care practitioners will receive a monthly salary⁴⁰.

⁴⁰ Ministry of Health, 2015. *Home Based Care Practitioner Program (HBCPP): concept*. Kigali, Rwanda.

At the moment, there is no guideline on how these home-based care practitioners will collaborate with CHWs. It is the opinion of the evaluators that the issue of harmonisation and complementarity across community cadres needs to be clarified as a matter of priority, in order to avoid overlap in roles, confusion at community level, duplication of management structures, possible conflicts related to different recruitment criteria, and training approach and remuneration policies across the two cadres.

FINDING 2.3. CHWs ARE HIGHLY VALUED BY COMMUNITIES, IN PARTICULAR IN REMOTE AREAS

Community ownership and active participation to community health activities are central elements of the CHP strategy. The evaluation has assessed the perspective of stakeholders at all levels, from the policy maker down to communities, to explore the relevance and acceptance of the CHP for its users.

Key informants at national and district level described how the CHP is more relevant for remote, rural areas, particularly in hard to reach areas where there were shortages of health workers. Participants at national level mentioned the importance of the CHP given that *'the number of health professionals is small'*, commenting that the government cannot employ sufficient staff to *'reach the community level'*. District level participants described how CHWs had reduced the workload of the HCs by treating some minor illnesses which could be handled at community level, whilst key informants at national level explained how CHWs were an important component in the national disease outbreak response activities, such as malaria.

Regarding community acceptability of the CHWs, there was a general impression among national level respondents that the CHWs were well received by their respective community as they were elected by their fellow community. This view was also reflected in some community FGDs; men and women commented that CHWs have good intentions towards the wellbeing of their community and were generally well received by their community. However, community acceptance of the CHWs seems to depend on the behaviour of individual CHWs. For example, in one community discussion participating men explained that not all CHWs *'offer services in the same way'* and how a CHW who provides *'good services and accomplishes his or her tasks is indispensable'*, but if they do not, *'no-one values their contribution'* (male community member in a FGD in Ngororero district). CHWs' practice also appears to vary, for example, in the care of pregnant women, women explained how some CHWs would be proactive following up pregnant women right from the beginning of their pregnancy, while in other villages women can *'have still births without the CHW knowing'* (female community member in a FGD in Kayonza district).

According to our qualitative research, most CHWs feel that they were well received by their community. In the words of a CHW who participated in the evaluation: *"I think that people feel free to consult us in all their daily activities. That is because we provide them advice in many different things such as paying for insurance, treating their children and the available services from the HC. They are always interested in listening to what we say which shows that they have trust in our abilities"* (CHW in a FGD in Gicumbi district). Community women believed that community participation is ensured by attending meetings organised by CHWs and using their services.

Another aspect that seems important to participants at community level is ownership of the CHP by the community, and views on this vary. There is a perception among key informants at national level that CHWs are elected by the communities they serve, and therefore the community felt they had some degree of *'ownership'* of the CHP, and valued the work of the CHWs.

However, some community groups complain about the lack of opportunity to participate in selection of the CHWs. Both men and women report they had no knowledge on how the CHWs were selected in their village; some community members felt that it was the top-down decision made by the government and the village leaders. Community members also expressed a desire to be more involved in the selection process, suggesting village residents *'should appoint CHWs'* because residents are *'better acquainted with the work ethic of a CHW'* (male community members in a FGD Ngororero district).

FINDING 2.4. TRUST AND RESPECT ARE KEY ELEMENTS OF COMMUNITY USE OF CHWs

A common, emerging theme from our qualitative research was the importance of client satisfaction within communities.

Some community groups were less satisfied with the services provided by CHWs. Men and women described how CHWs were often not available when they needed them because they were engaged in other income-generating activities. In some situations, the community found CHWs unable to help because they were *'drunk'* or engaged in other activities that meant they could not provide services (male community members in a FGD in Ngororero district). Communities tend not to accept the CHWs if they do not follow their social norms as one community woman noted how they were *'concerned'* when they saw a CHW *'promiscuous because they were setting bad example.'*

One reason for community members avoiding CHWs was lack of trust in them; both men and women shared this view and explained how they thought that some CHWs did not respect confidentiality of the information shared with them. For example, in one discussion with men, they explained how CHWs share information *'without approval'* and if community members discovered that a CHW had revealed information they would seek care at the HC instead. Other community members explained how they would either go straight to the HC or to a CHW from the next village so that their information could not be shared with other people from the same village. However, this was contrary to the views expressed by national level key informants, who were of the opinion CHWs received the most trust from their fellow villagers.

FINDING 2.5. COMMUNITY VALUE CHWs' HEALTH PROMOTION AND PREVENTIVE SERVICES MORE THAN CURATIVE SERVICES

Other members of the community mentioned how they did not *'trust CHWs to dispense medicines appropriately'* which led them to seek care directly at the health facility instead of consulting CHWs (male community member in Ngororero district). In fact, a common perception among the community groups (both men and women) was that people sought help from the CHWs mostly for preventive activities, but in the case of a severely ill child, parents *'head straight to the hospital'* without consulting the CHW (male community member in a FGD in Ngororero district). Community groups regarded CHWs as an advocate for promoting the CBHI (male community members in a FGD in an urban area in Kicukiro district). CHWs are seen as an interface between the community and the HCs as they fasten the referral process by *'calling an ambulance'*. In addition, in cases when the community cannot pay some health insurance, CHWs acted as *'judge and jury'* or *'advocate'* from the community side (male community member in a FGD in Kayonza district). Communities found CHWs have been useful in providing health education to marginalised groups such as *'teenage pregnancy who has been neglected by her family'* and *'orphan girl who became pregnant'*. Indeed, some community members appreciated CHWs for their personalised health education depending on the needs of the family within their community (male community members in a FGD in an urban area in Kicukiro district).

During FGDs, community members described how some groups tend not to use services of the CHWs, and these included young, educated and well-off people with health insurance, as well as elderly people who rarely welcome CHWs. Age was also brought up as a barrier in some key respondents who perceived that they are not so good in gaining new skills. Indeed, there were some community groups who questioned that most CHWs were quite old which made them difficult to retain and apply the knowledge and skills they had learnt from the training. Hence, during FGDs with community men, they recommended why they could not have CHWs with different age groups, particularly to train educated youths as CHWs (male community members in a FGD in Ngororero district). The CHWs made similar comments, mentioning how educated, well-off people with health insurance tend not to consult them, often because they think CHWs are *'not qualified to treat their children'* and they *'don't trust'* CHWs (CHWs in a FGD in urban area in Kicukiro district).

4.2. EFFECTIVENESS

The assessment of effectiveness of the CHP program entailed – following the OECD/DAC definition of effectiveness - appreciating whether the program has achieved (or not) its objectives, and to what extent.

As previously reported in this document (see Finding 1.3), the definition of the objectives of the CHP posed a logical problem to the evaluators, since the objectives are articulated in such a way that their focus is on processes related to the implementation of the plan, rather than on outputs and outcomes.

This component of the evaluation has essentially addressed a central question, i.e. whether the CHP has delivered its intended output – the deployment a cadre of CHWs at scale, who deliver a defined package of interventions at community level - and how the various program components have contributed to that.

Objectives of the CHSP

1. Strengthen the capacity of decentralised structures to allow community health service delivery.
2. Strengthen the participation of community members in the community health activities.
3. Strengthen CHWs Motivation through c-PBF to improve health service delivery.
4. Strengthen coordination of community health services at the central, districts, health centres and community levels.

In essence, in evaluating effectiveness the evaluation has looked at the primary output of the CHP, i.e. service delivery and scope of practice; and at the processes underlying the delivery of the program: recruitment; training; planning and coordination; workload; supervision; equipment; motivation; reporting; referral.

It must be noted that the above mentioned program components reflect the ToC of the program at activities and output level, and that such components do partially overlap with the logical framework set through the CHP Strategic Plan. Given the limitations of the LF highlighted earlier in this document (see Finding 1.3.), the evaluation has followed the ToC as the basis for drawing conclusions on effectiveness, rather than the CHP LF. However, where possible, achievements measured through the evaluation have been linked with CHP indicators and targets.

Findings are reported below, according to the proposed framework.

The findings related to EQ3 will primary look at the model of service delivery and to its results, whereas findings under EQ4 will focus on process-related bottlenecks and facilitators to achieving program outputs.

EQ3 Has the CHP achieved its objectives? To what extent and how?

FINDING 3.1. THE CHP IS SUCCESSFUL IN DELIVERING A SET OF ESSENTIAL INTERVENTIONS AT SCALE

At the time of writing the evaluation report, the CHP relied on 43,290 active CHW, of whom 29,060 are binomes and 14,230 ASMs⁴¹.

According to SISCOM data, during the period January to December 2015:

- More than 900,000 sick children under the age of five years were assessed by binomes, and more than 420,000 cases of malaria, diarrhea or respiratory infections in children were diagnosed and treated.
- More than 237,360 pregnant women were identified by ASM, and 172,000 were referred to HFs for ANC during the first four months of pregnancy.
- Nearly 175,000 pregnant women were accompanied by ASMs for delivery at health facilities.

⁴¹ Source: Rwanda Biomedical Centre, data accessed in September 2016

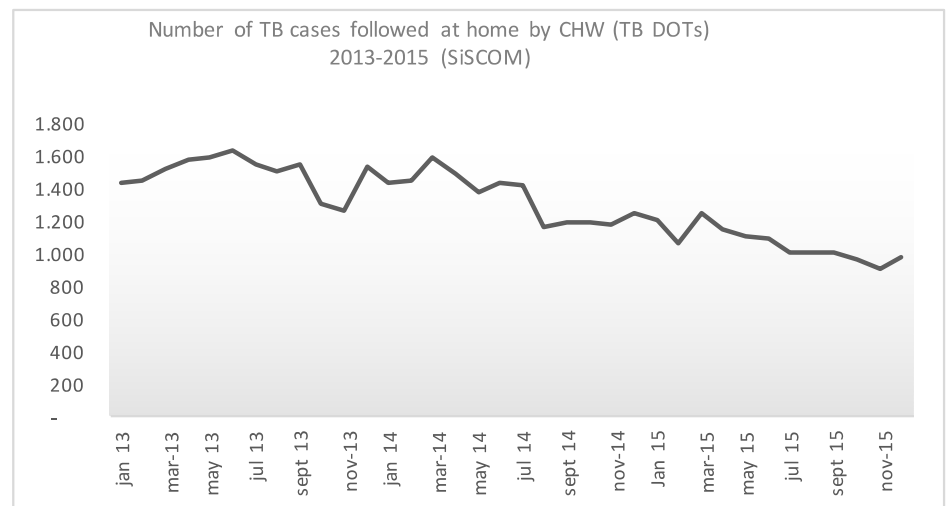
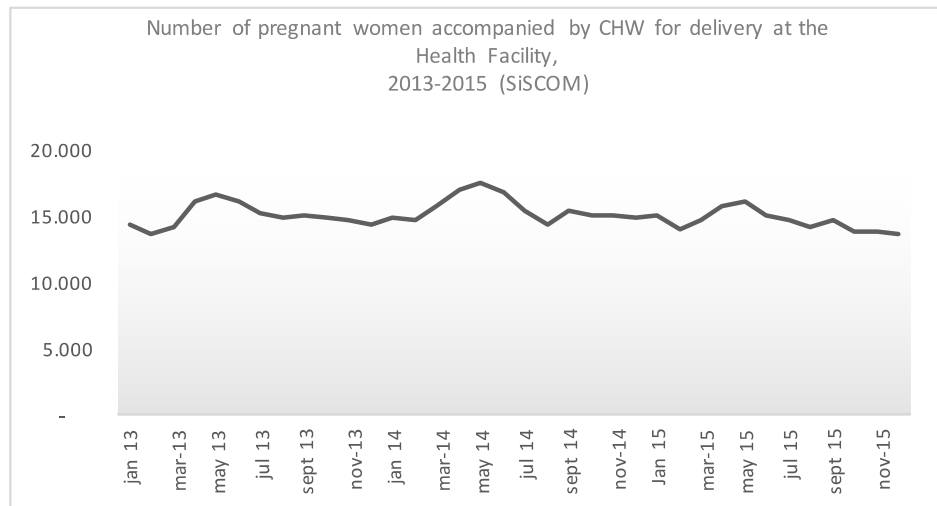
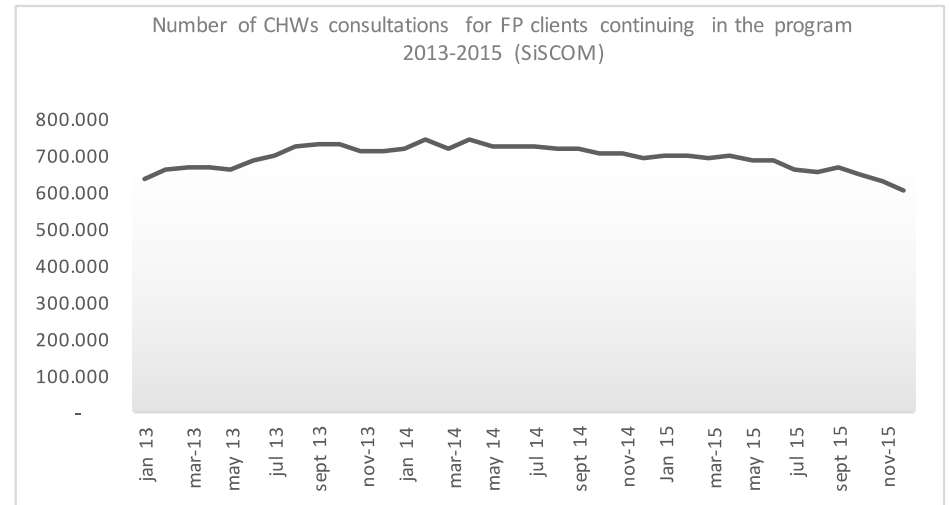
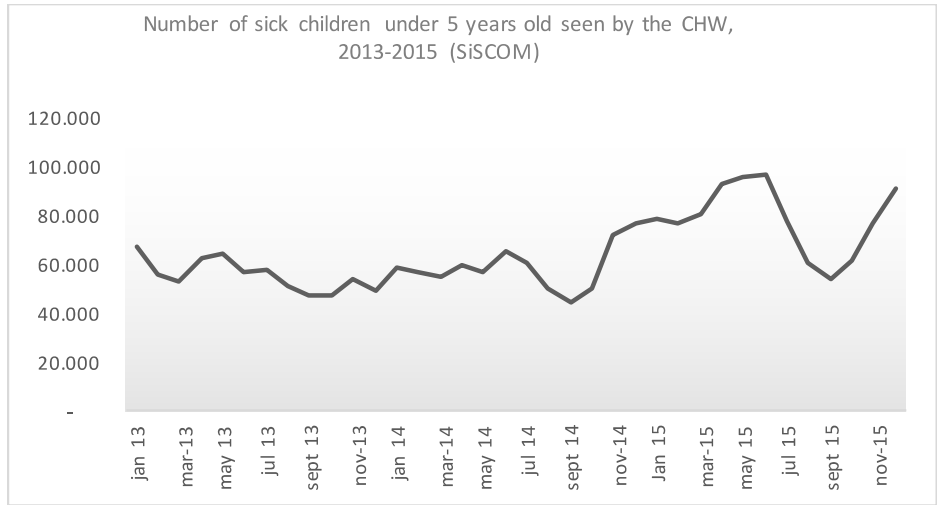
- About 350,000 IEC sessions were delivered in communities by CHWs.
- 167,000 new clients were referred to HFs for family planning.
- ASMs and binomes together referred 93,000 suspected cases of TB to HFs for diagnosis.
- About 1.1 ML children had been screened for malnutrition, and 36,000 were referred for possible malnutrition.

The crude figures reported above per se, testify that the program delivers at a substantial scale.

Trends over the past three years (2013-2015), for which a consistent and complete set of secondary data is available via SiSCOM, also suggest that the levels of service delivery at community level have plateaued to a steady and significant scale, with the exception of TB services. Peaks in delivery of iCCM services are mostly associated to seasonal trends and/or to epidemics (e.g. malaria).

Figure 12 below presents trends in the levels of service delivery at community level, for selected tracer interventions offered by binomes and ASMs.

Figure 12. Trends in service delivery at community level, for selected intervention (SiSCOM, 2013-2015)



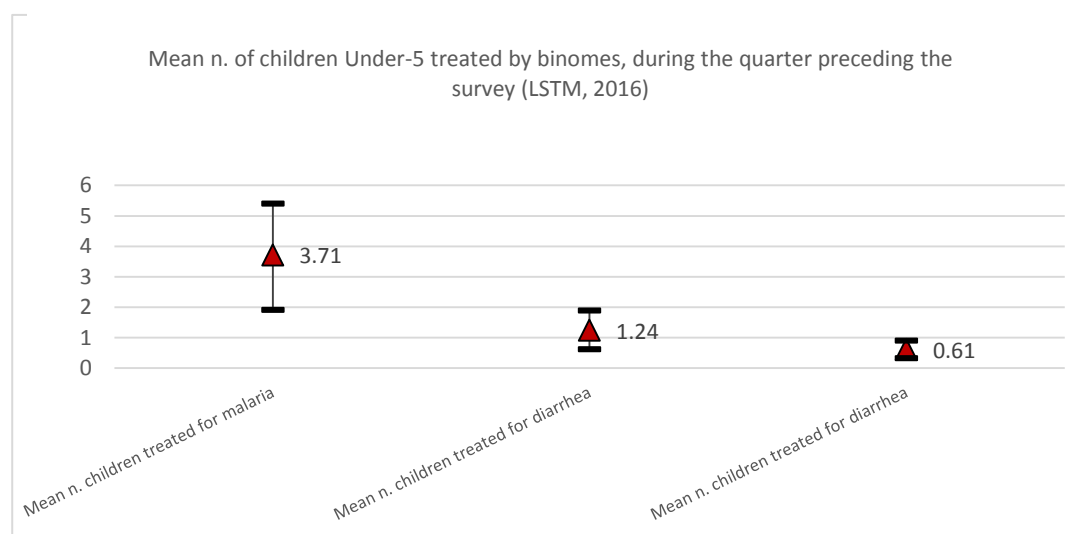
In short:

- **Access to immediate diagnosis and care for sick children** - The level of services offered by binomes for the consultation and treatment of sick children in communities has significantly increased over time. The total number of sick children under the age of five seen by binomes was 665,000 in 2013; 705,000 in 2014; and 940,000 in 2015. The major driver of such increase has to be sought in the resurgence of malaria in Rwanda during 2015. In fact, whilst the number of contacts with CHW for diarrhoea and pneumonia remained stable over the three years, the number of children seen for fever/malaria increased from 200,000 in 2013 to 270,000 in 2014, to 462,000 in 2015. With an average of 78,000 children under-5 seen per month during the course of 2015, the average number of children seen by binome per month is calculated at 2.6 (7.8 per quarter). This largely exceeds the target of 2.2 consultations per CHW per month set by the CHP strategic plan.

Data from the LSTM Survey 2016 confirm these levels of reach, with an estimated number of 5.6 children treated for iCCM during the quarter preceding the survey.

Figure 13 below presents the average number of children treated by binomes, by disease, according to our survey data:

Figure 13. Monthly caseload for iCCM services provided by binomes (LSTM, 2016)

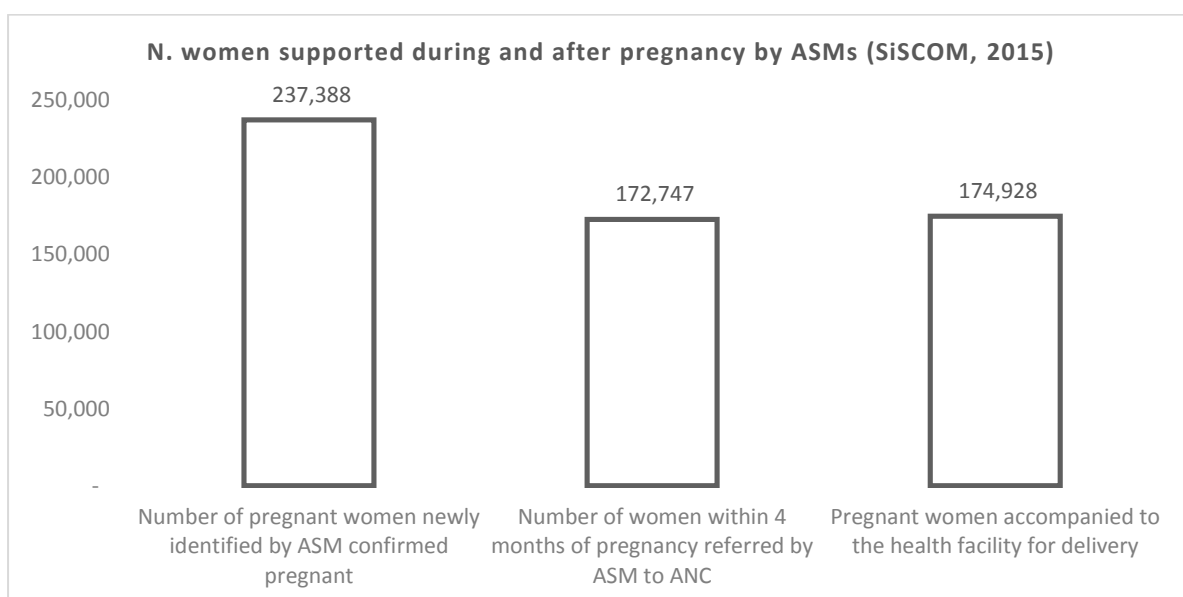


It should be noted that the LSTM survey data projection estimates also reveal that during Q2 2016 only, approximately 217,000 cases of malaria in adults were treated by CHWs at community level. No routine data was found via HMIS or SiSCom about the number of malaria cases in adults treated at community level.

- **Family planning** - The average number of CHWs' consultations to FP clients was estimated at approximately 677,000 per month in 2015, being stable over the past three years. This intervention remains the most demanding for CHWs, in terms of reach, at an average of more than 20 consultations with FP clients per CHW per month. Data from our survey of CHWs suggest that the most common methods offered at community level by binomes are injection, contraceptive pill, and male condoms. Cycle beads and female condoms were not reported to be methods offered to any clients by binomes, during the quarter preceding the LSTM survey.

- **Antenatal care and delivery** - ASMs' work in identification and follow-up of pregnant women throughout pregnancy and during the postnatal period has been stable over the past years. Also, as shown in **Figure 14** below, the ASMs are able to maintain an effective contact with their clients throughout the period: in 2015, ASMs identified more than 230,000 newly pregnant women, and actively followed more than 170,000 pregnant women during antenatal care and delivery.

Figure 14. Delivery of RMNH services from ASMs (2015, SiSCOM)



SiSCOM data suggest that on average ASMs during 2015 supported 3 women per quarter during ANC, and 3 women per quarter for delivery. Our survey confirms these estimates (number of pregnant women accompanied for delivery during the quarter preceding the survey: 2.67; 95% CI 1.73 - 3.6). Both SiSCOM and the LSTM survey confirm that no use of misoprostol at community level is actually recorded/reported.

- **Health promotion** – Health and nutrition promotion is at the core of the CHWs work, and as reported previously in this document, it is highly valued by communities. Data from SiSCOM suggest that in 2015 alone, approximately 350,000 sessions of health promotion were offered by CHWs in communities (this makes an average of 2 sessions per month per community). The LSTM survey (2016) provides additional information regarding the mode of service delivery and the most common promotion sessions offered.

According to the survey, CHWs systematically perform health promotion activities with the other CHWs deployed in the same community; in most cases (58%) they plan the topic of the session together. Collaboration with other cadres (e.g. cell coordinators, in-charge of CHWs at HC, village leaders) in delivering health promotion is limited (11%). The most reported topics in which health promotion sessions are provided are hygiene and sanitation (79%); use of LLINs (64%); health care seeking behaviour (61%); and payment of CBHI (76%). Sessions on NCD and on GBV are the least commonly reported topics offered by CHWs in communities.

For nutrition promotion, the sessions most commonly offered by CHWs include kitchen gardens (90%) and cooking demonstrations (80%). Sessions on home-based food fortification are the least common (34%).

- **TB** – The scale of service delivery of TB services is not at the same levels of other above reported interventions. We note that the number of cases of TB DOTs followed at community level has decreased over time, and it can be estimated that an average of 1,000 TB patients under community DOTs, during the course of 2015.

FINDING 3.2. THE CHP ADDRESSES A SIGNIFICANT PROPORTION OF THE OVERALL DEMAND OF THE RWANDAN POPULATION, FOR SELECTED SERVICES

The deployment of CHWs absorbs a proportion of the overall demand for services, hence providing an effective platform for service delivery that complements the services offered by the formal health system. Various sources of data confirm this statement, at least for selected programs.

→ **Maternal and newborn care:**

There are approximately 363,000 expected birth per year in Rwanda (Countdown to 2015 country profile, 2015). With an estimated number of 175,000 women accompanied for ANC and for delivery by ASMs cumulatively in 2015, we can infer that more than 50% of pregnant women receive support from ASMs at community level during the course of their pregnancy.

→ **Family planning:**

Recent data from the Rwanda DHS 2014-2015⁴², CHWs account for 24.6% of the overall distribution of modern methods of contraception to users. In particular, 33.2% of pills distribution is estimated to be delivered by CHWs, and 34.7% of injectables.

→ **iCCM:**

Data from DHS 2014-2015 indicate that for children under five with fever during the two weeks preceding the survey, advice was sought from CHWs in 12.1% of cases. The proportion of children for whom advise was sought from a CHW is estimated at 21.7%. Similar estimates are presented for children presenting symptoms of ARI (14.2% of children seen by CHWs) and for diarrhoea (10.4%). This is summarised in **Table 11** below

Table 11. Contribution of CHWs to service delivery for childhood illnesses (DHS 2014-15)

<i>Indicator</i>	<i>CHW</i>	<i>Health facility/provider</i>
Proportion of children with fever for whom advise or treatment was sought from	12.6	49.2
Proportion of children with diarrhoea for whom advise or treatment was sought from	10.4	43.6
Proportion of children with symptoms of ARI for whom advise or treatment was sought from	14.2	53.9

⁴² National Institute of Statistics of Rwanda, Ministry of Health Rwanda, ICF International. Rwanda Demographic and Health Survey 2014-2015

→ **TB treatment and case finding**

On average, according to SISCOM data, 1,056 cases of TB were under DOTs and supervised by CHWs, in 2015. This is approximately 18% of the total 5,637 cases of TB notified in 2015 (WHO, Rwanda Tuberculosis profile, 2015).

For TB case finding, as reported in the National Tuberculosis Strategic Plan 2013-2018⁴³, CHWs play an important role in identifying suspected cases and in referring them to facilities ‘*The National TB program (NTP) has invested a lot of interventions geared towards increasing TB case finding where TB suspects increased from 28,637 in 2005 to 165,864 in 2012, and CHWs have contributed for a third of TB smear positive cases.*’

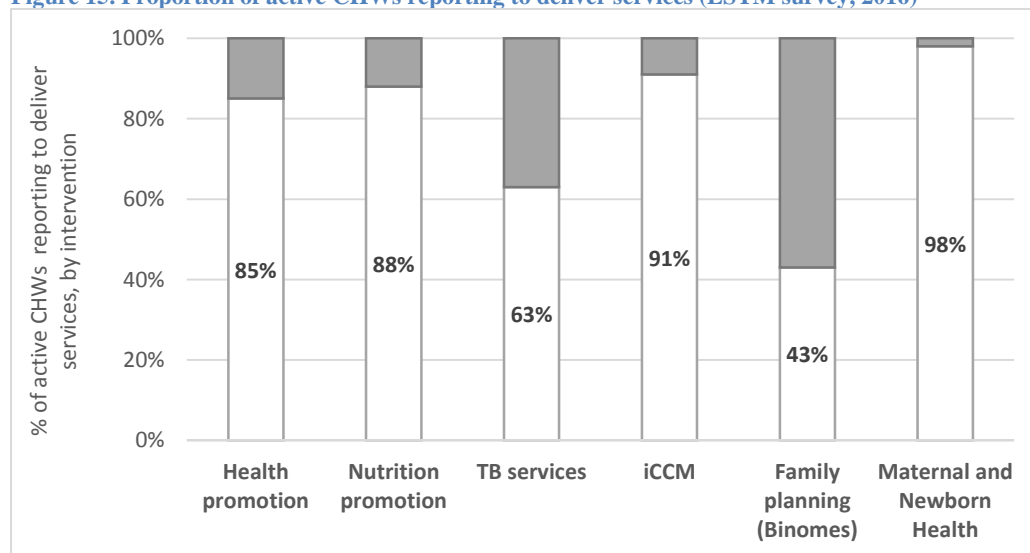
The TB annual report July 2014- June 2015⁴⁴ confirm the relevance and importance of CHWs in TB active case finding. According to such report, during the period ‘*Presumptive TB cases brought by CHWs represent 48.6% of all presumptive TB cases, contributing up to 26.4% of all SS+ TB cases detected.*’

FINDING 3.3. – THE CURRENT MODEL OF SERVICE DELIVERY IS NOT EXPLOITED AT ITS FULL POTENTIAL

Regardless of the very encouraging results and achievement of the program, our primary data indicates that there is room for improvement in delivering services. In fact, the survey performed by LSTM in 2016 indicates that the proportion of CHWs self-reporting to deliver services varies according to specific interventions.

This is indicated in **Figure 15** below: whereas the active CHWs currently delivering iCCM (91% of binomes) and MNH (98% of ASM) is close to optimum, the proportion of CHWs delivering TB services (63%) and family planning (43% of active *binomes*) instead presents significant opportunities to enhance service delivery. In the case of family planning, in 16 out of the 30 districts, only one of the two binomes available in each village was trained to deliver FP due to lack of funding.

Figure 15. Proportion of active CHWs reporting to deliver services (LSTM survey, 2016)



The sub-optimal level of delivery of services by CHWs who are deployed in communities comes at a cost, in terms of missed opportunities.

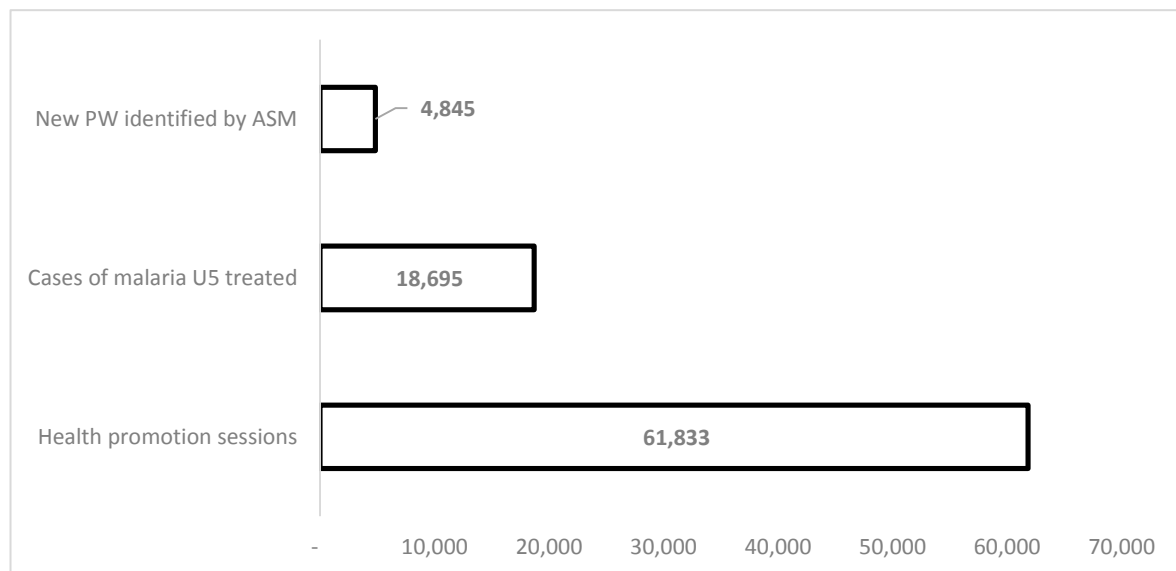
⁴³ Rwanda Biomedical Centre. National Tuberculosis Plan 2013-2018. August 2014.

⁴⁴ Rwanda Biomedical Centre. Tuberculosis and Other Respiratory communicable Diseases Control in Rwanda. July 2014- June 2015

As an example of the magnitude of missed opportunities deriving from having CHWs deployed but not actively delivering specific services is provided below.

The analysis shows the additional number of activities that might be theoretically reached for various interventions, if 100% of CHWs delivered those interventions at the same average level of performance of the one's currently delivering services.

Figure 16. Additional services that may be provided by CHWs, if 100% of CHWs delivered the intervention



Estimates on the level of performance (av. N. cases per CHW per month) were drawn from SiSCOM data available for 2015. The data set accessed in September 2016 (with information on available CHWs in country) was used to draw a denominator (CHWs).

FINDING 3.4. - THERE ARE POTENTIAL INEQUITIES IN DELIVERING SERVICES UNDER THE CURRENT MODEL OF CHWs DEPLOYMENT

As described earlier in this report, the model of deployment of CHWs in Rwanda is based on a formula of allocation of a fixed number of CHWS per each community. Whilst this model was undoubtedly fit for purpose and relevant at the times of the introduction of the CHP, issues such as population growth and urbanisation may challenge such model nowadays.

As cited in the Rwanda National Urbanisation Policy (2015), *‘Urbanisation in Rwanda is characterised by demographic growth and by migration to urban areas, accompanied by the installation of displaced people and returnees after the 1994 genocide against the Tutsi. The urban population has increased from 4.6% in 1978 to 16.5% in 2012. The Vision 2020 prepares for reaching 35% in 2020’.*

The same document presents projections from the National Institute of Statistics, showing that urbanisation is not only a phenomenon related to Kigali, but instead most of the secondary cities are expected to double or triple in population by 2020.

Table 12. Urbanisation rate projection in the secondary cities

	Huye	Muhanga	Nyagatare	Rubavu	Musanze	Rusizi
Urban population (2012)	52,768	50,608	47,480	149,209	102,082	63,258
Projected population (2020)	103,654	111,901	181,600	421,124	236,638	137,315
Projected increased population	+ 50,887	+ 61,293	+ 134,600	+ 271,915	+ 134,556	+ 74,057
Projected increased HH's	+ 13,048	+ 14,950	+ 34,390	+ 63,236	+ 30,581	+16,099

Source: National urbanisation policy 2015, p.9

At the same time, data from DHS 2014-2015 clearly suggest that the rate of utilisation of CHWs for ICCM varies significantly between rural and urban areas, as summarised below in **Table 13**, where data on use of CHWs for advice and/or treatment for childhood disease are report by rural and urban areas.

Table 13. Proportion of children for whom advice or treatment is sought from CHWs, by residence (RDHS 2014-15)

	Urban	Rural	Rwanda
Children with fever for whom treatment was sought from CHW	6.9	13.6	12.6
Children with diarrhea for whom treatment was sought from CHW	5.3	11.2	10.4
Children with ARI for whom treatment was sought from CHW	8.1	15.3	14.2

With more population moving towards urban areas, where CHWs are a less preferred choice as a service provider, a fixed formula of allocation of CHWs may not be the most effective.

Independently from prospective considerations regarding population growth and urbanisation, the model of deployment of CHWs in Rwanda presents some issues for consideration, with regard to the distribution of CHWs per population. The model Rwanda has used since its conception is three CHWs are deployed in each community of the country. The deployment of such model was conceived with an underlying approach of equality and equity for all Rwandans, and sustained at scale for more than two decades.

Box 1 – Determinants of Operational Design of CHWs programs

'Costing and operational design will need to be developed based on contextual factors, including relationship to existing formal or volunteer cadres, existing regional pilots or NGO-supported interventions. There is no one-size- fits all approach to the development of community health programs. CHW operational designs must respond to local epidemiology, culture and geography, particularly when determining the core CHW functions, catchment area and selection criteria.' **(One Million Community Health Workers. Technical Task Force Report)**

Key determinants of the operational design of a CHWs program are identifiable as follows:

- Population density
- Facility density and accessibility
- Specific disease density
- Community education level and literacy
- Financing availability
- Strength of the health system
- Political support

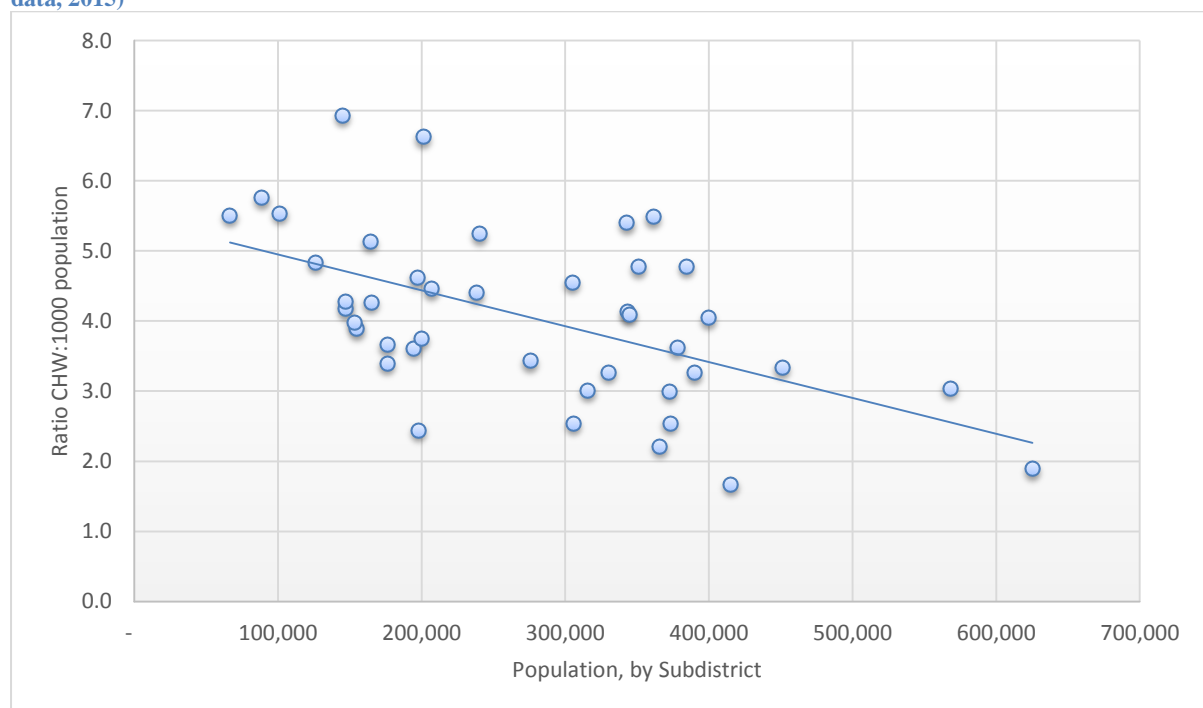
The Technical Task Force Report compares the operational model adopted in various countries, including Senegal, Mali, Nigeria, Ghana, Kenya, Tanzania, Ethiopia, Malawi and Rwanda. In such comparison, Rwanda stands as the model with the highest average number of households per CHW (35), and as the unique case of non-fixed remuneration of CHWs.

An analysis of the distribution of CHWs by population shows that there are potential inequalities in access to the population under the current model.

With an estimated population of 11.5 ML in 2015 (census projections), and a total of 43,290 active CHWs as of mid-2016, Rwanda has an average of 3.8 CHWs per 1.000 population.

As shown in **Figure 17** below, we plotted the actual ratio of CHWs population, per each (sub) District Hospital catchment area of the country. The distribution is far from being equal, with smaller districts presenting - on average - a higher ratio of CHWs per population than the largest ones, and with medium sized sub-districts presenting a variable ratio.

Figure 17. Ratio of CHWs per 1,000 population, by District Hospital Catchment areas and population size (Siscom data, 2015)



The model of deployment, not based on population density, presents two potential issues:

1. Unequal access to services for different locations
2. Unequal workload for CHWs depending on their density per population

In addition, the current model of deployment of CHWs doesn't take into consideration the relief and geographical size of the umudugudu covered by CHWs, as well as the epidemiologic profile. Although our analysis could not compare the use of services and workload of CHWs in urban vs. rural areas, and densely populated vs. less populated umudugudus, it is opinion of the evaluators that the current model of deployment of CHWs doesn't provide equal and equitable access to CHWs services.

EQ4 What were the main facilitators and barriers to achieving the program objectives?

The degree of achievement of program results depends largely on the policies underlying the functioning of the CHP, i.e. on the design and implementation of the chain of activities which is required to deploy CHWs and to maximise their performance.

We have identified (as per ToC presented earlier in this report), some critical activities, or program components: recruitment; training; procurement and supply of equipment and drugs; supportive supervision; monitoring and evaluation; reporting; retention policies.

Key findings related to such chain of events are presented below, as key determinants of the program effectiveness.

Box 2 –Barriers and enablers of performance of community health workers in low and middle income countries

‘Community health workers are increasingly recognized as an integral component of the health workforce needed to achieve public health goals in low and middle income countries. Many factors influence performance of CHWs. A systematic review was conducted to identify intervention design related factors influencing performance of CHWs.

A mix of financial and non-financial incentives, predictable for the CHWs, was found to be an effective strategy to enhance performance, especially of those CHWs with multiple tasks. Performance-based financial incentives sometimes resulted in neglect of unpaid tasks. Intervention designs which involved frequent supervision and continuous training led to better CHW performance in certain settings. Supervision and training were often mentioned as facilitating factors, but few studies tested which approach worked best or how these were best implemented. Embedment of CHWs in community and health systems was found to diminish workload and increase CHW credibility. Clearly defined CHW roles and introduction of clear processes for communication among different levels of the health system could strengthen CHW performance.’⁴⁵

FINDING 4.1. THE CURRENT POPULATION CHARACTERISTICS OF CHWs MAY PROSPECTIVELY AFFECT RETENTION AND ACCEPTANCE BY COMMUNITIES

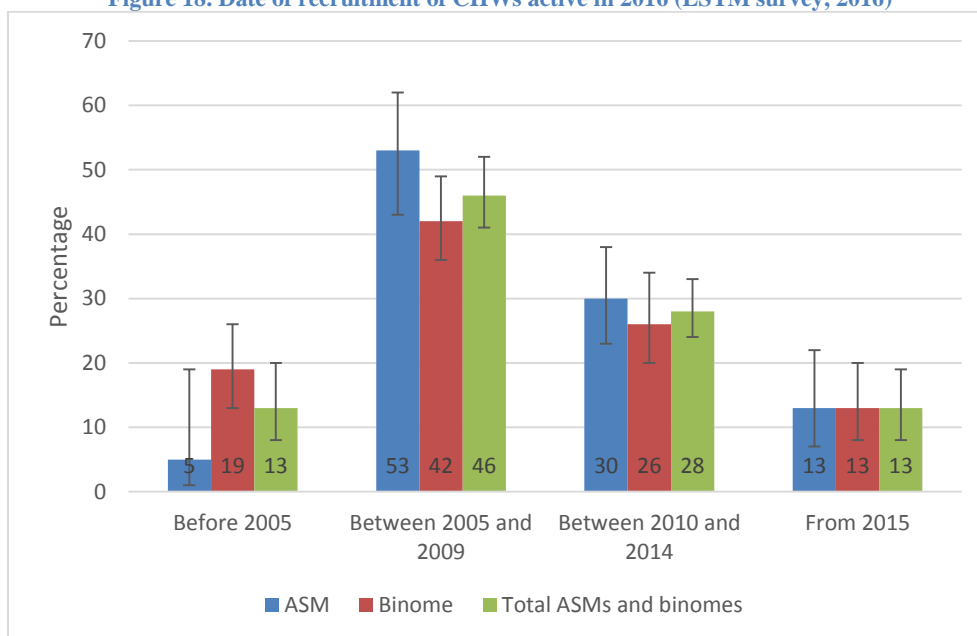
The CHP handbook states that to become CHWs candidates must be aged between 20 and 50 years old. However, there is no term limit. The survey performed by LSTM in 2016 indicates that amongst CHWs surveyed, the median period in-post is estimated at 7.2 years, with a slightly higher median duration in-post reported by binomes (8.1 years). Most of the CHWs currently active – approximately 60% - were recruited before 2010 (**Figure 18**).

In terms of recruitment, virtually all of the CHWs (94%) report to have been selected via a community meeting. More than half of CHWs (54%) were selected and recruited to replace another CHW who had left his/her post vacant; this indicates that there has been a natural generational rotation of CHWs over time.

About 70% of CHWs had received some information about the role and responsibilities of CHWs prior to accepting the role; this information was primarily obtained from other CHWs in the community, or from community leaders and/or HC staff.

⁴⁵ Kok et al. Which intervention design factors influence performance of community health workers in low and middle income countries? A systematic review

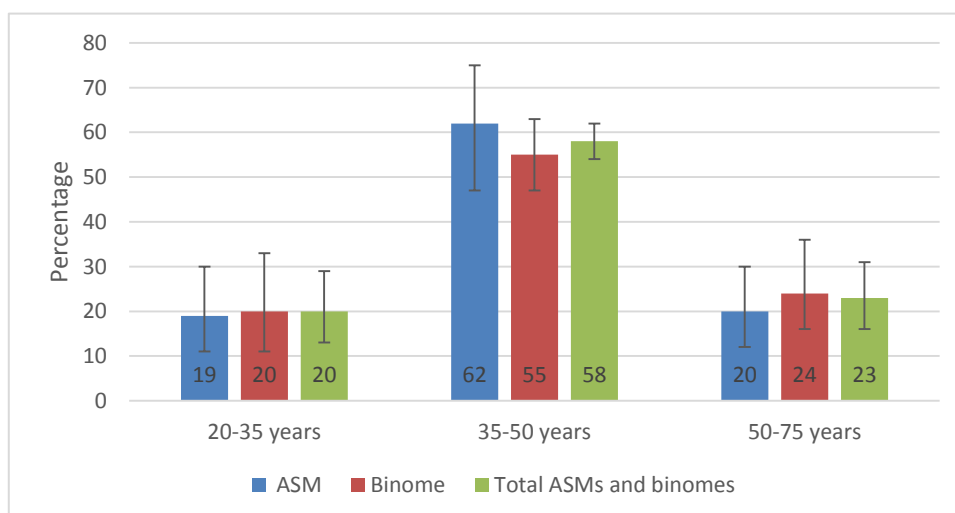
Figure 18. Date of recruitment of CHWs active in 2016 (LSTM survey, 2016)



Motivation (45%) and trust from the community (83%) are the most commonly perceived reasons from CHWs for being selected by their own communities. The leading factor motivating individuals to take on the role of CHW in their own community is the possibility to improve the health status of village members (84%); career opportunities and incentives have no reported influence in considering taking this post.

According to our survey, the median age of CHWs is 42 years old. As **figure 19** below indicates, almost one out of four CHWs are 50 years old or over. This poses two prospective problems to the program: the acceptance of older CHWs by communities; and the natural turnover that may be expected due to an ageing population.

Figure 19. Age of CHWs (LSTM survey, 2016)



FGDs conducted with female and male community members revealed that CHWs were - in general - well accepted by their respective community. However, some community groups questioned that most CHWs were quite old, which made them difficult to retain and apply the knowledge and skills that they learnt from the training.

“... If I am 20 years old, then I cannot share my problems with a 50-year-old female community health worker. I would prefer to discuss with a health worker who is my peer because it is easier.” (Male community member in Ngororero district)

During FGDs, male community members recommended that there should be CHWs with different age groups in a same village.

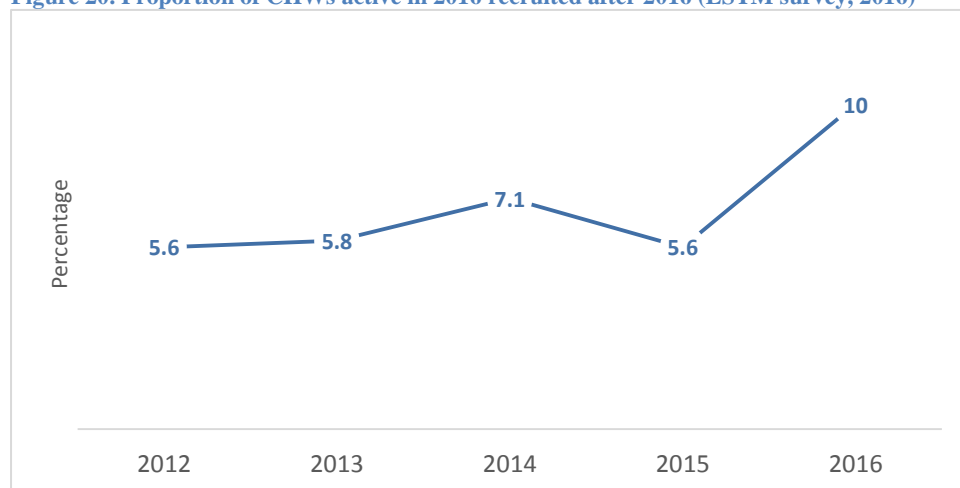
Regardless of issues related to community acceptance, which is and remains paramount for the success of the program, the CHWs population is also ageing, and it is predictable that the attrition rate will increase over time due to older CHWs naturally ceasing their functions in communities.

In FGDs and KIIs with CHWs, CHWs were questioned about the reason for attrition of their colleague CHWs. CHWs often mentioned the loss of trust by the community because of inappropriate behaviour as a reason of dismissal. However, the death of CHWs was also regularly mentioned. The ageing of the CHWs population should be considered when planning for the needs in recruitment and training of new CHWs in the following years.

We modelled our survey data to estimate the attrition rate of CHWs.

In 2011, Rwanda already counted around 45,000 CHWs following a model of three CHWs per village. Therefore, we assumed that CHWs recruited after 2011 have been recruited to replace CHWs who dropped out. The annual percentage of CHWs recruited after 2011 – calculated through the survey - will therefore serve as a proxy to estimate the attrition rate. **Figure 20** shows that this annual percentage remains constant over the years. Around six percent of CHWs active mid-August 2016 were recruited between January and mid-August 2016, which let forecast an approximate attrition rate of 10% for 2016. Therefore, we can estimate the annual attrition rate of CHWs to be between 6 and 10%.

Figure 20. Proportion of CHWs active in 2016 recruited after 2016 (LSTM survey, 2016)



FINDING 4.2. THE MODEL OF TRAINING PRESENTS SIGNIFICANT AREAS OF IMPROVEMENT (TRAINING)

Per the CHP guidelines, CHWs receive an induction training soon after their election. After this induction training, they can start health promotion activities. The survey data (Figure 21) confirms that 88% of CHWs received an induction training. Even though the proportion of CHWs who received an induction training is quite high, during FGDs, CHWs complained about challenges faced by newly recruited CHWs who did not receive this induction training.

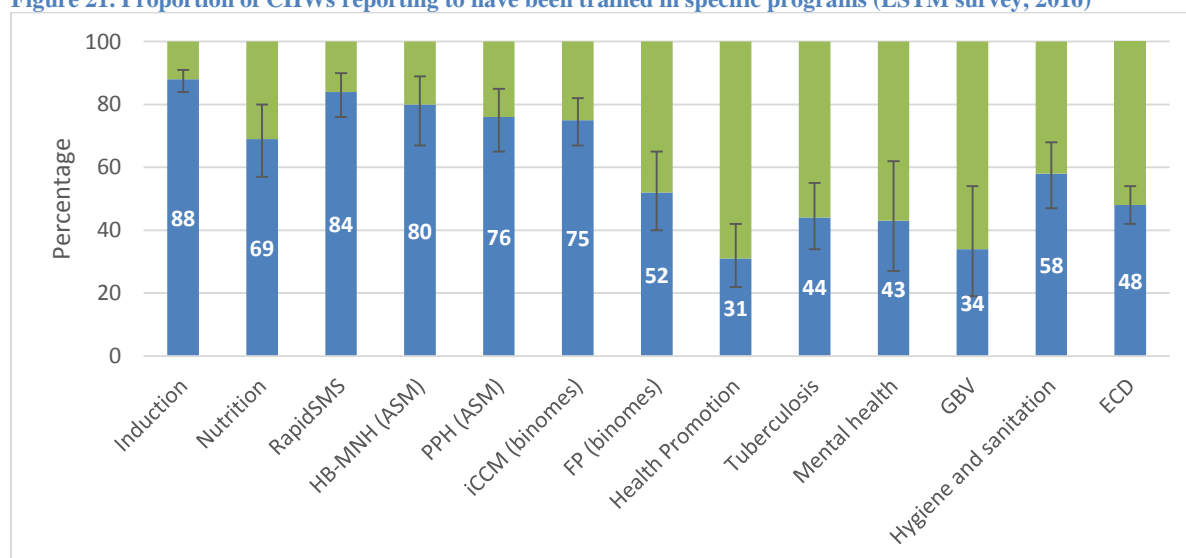
“I am the only CHW who got the (induction) training in my village because others are new since they joined the Community Health Program as replacements. So it is challenging to my colleagues to perform their tasks while they didn’t receive the training” (CHW in urban area from Kigali region)

The LSTM survey indicates that the median time elapsed between the election as a CHW and the induction training was three months. In areas with a high CHW turnover rate, this results in long gaps in the delivery of services between the time a CHW drops out and the time his/her replacement is fit for work.

The current training model for CHWs entails that following the induction training, ASMs and Binomes will receive training by individual modules/packages related to the specific programs that they offer. Modules are not offered as a comprehensive and integrated package, but rather as stand-alone training sessions which do not necessarily happen at the same time after deployment. Training is offered at the health facility, and the duration of the packages varies according to content.

The LSTM survey estimated the proportion of CHWs who received training in their areas of service delivery. Some CHWs were confused about what to define as a training, whether to consider supervisory visits or coordination meetings that incorporated messages about health and treatment provision as trainings. Enumerators were trained to distinguish supervision – when knowledge or competencies are assessed – and training – when new knowledge or new competencies are learnt. However, LSTM research team is aware that CHWs who acquired new knowledge and skills in a very unstructured way may have reported themselves as not having received training.

Figure 21. Proportion of CHWs reporting to have been trained in specific programs (LSTM survey, 2016)



The LSTM survey shows (Figure 21) that almost 7 out of 10 CHWs reported to have been trained in providing services related to nutrition. There is a noticeable difference between ASMs and Binômes. Fifty-four per cent of ASMs reported to have been trained on nutrition compared to 79% of Binômes. This discrepancy is also noticeable for the training on TB. Only 32% of ASMs reported to have been trained on providing TB services compared to 52% of binomes. What appeared very clear is that, with a very few exceptions, CHWs recruited in the last four years reported not to have received any training on TB.

On the other hand, the coverage of training for areas specific to maternal and newborn health is high. Four out of five ASMs reported to have received training on providing HB-MNH, and three out of four reported to have received training on how to prevent post-partum hemorrhage.

The coverage of training for areas specific of binomes is lower. Three out of four binomes reported to have been trained to provide iCCM services and only one out of two to provide services related to Family Planning. Indeed, insufficient financial resources limited the roll out of FP training. In 18 of the 30 districts, only one out of the two binomes in the village have been trained in the provision of FP.

Following the training in various individual modules, the proportion of CHWs exposed to a refresher training varies according to the specific packages. In general, the proportion of CHWs who received refresher is below 50% for all the training modules, with exception of nutrition (55%). The lowest coverage of refresher training is reported for mental health (19%) and prevention of post-partum hemorrhage (12%).

“It is almost 2 years that there has not been any training for malaria, while there have been many new CHWs recruited” (a titulaire)

During FGDs, CHWs showed great appreciation of trainings, as trainings increased their confidence and esteem. Nevertheless, CHWs felt that there were less trainings than they should be receiving. They also complained that sometimes they did not have a chance to apply what they learnt from the trainings and lose their knowledge and skills as there was a lack of immediate needs or a lack of supplies when needs were there. Key informants at national level also recognised that limited financial resources did not allow them to provide the required trainings and refresher trainings.

Full details on training coverage are provided through the Annexed LSTM Survey report.

One key aspect related to training is of particular importance when assessing the effectiveness of the CHP: a significant proportion of CHWs are deployed to deliver services but are not adequately trained to do so. This potentially impacts either on the scale of service delivery (less service provision), or on its quality.

Although this evaluation did not assess the CHWs competencies, we administered a set of five simple questions to ASMs and binomes to draw a broad indication of their knowledge of essential issues related to RMNCHN.

All respondents (99%) could report the recommended schedule for exclusive breastfeeding (EBF), and more than 60% of surveyed CHWs could report at least three benefits of EBF for infants. Less than 40% of respondents could instead report at least three benefits of EBF for the mother.

“There are some CHWs who do that far better than nurses, there are some who give good quality injections. But we have some CHWs who do not master the technique. There are some cases where we have found women who fell pregnant while they receive injectables. We thought that the CHWs did not give the total quantity of the injections. There are some CHWs who do master how to aspire the products” (a titulaire)

Only more than a third of surveyed ASMs (34%) could report at least three danger signs of pregnancy. The individual conditions that ASMs could most commonly and correctly report as danger signs of pregnancy were: vaginal bleeding (90%), strong headache (63%), high fever (45%), and convulsions (43%). The least reported signs were blurred vision (7%), vaginal discharge (3%), painful urination (3%), and difficult breathing (5%).

Finally, we assessed the knowledge of binomes of the cut-off respiratory rate for pneumonia, and 64% of surveyed respondents could report those correctly.

FINDING 4.3. A REPLACEMENT POLICY FOR CHWs EQUIPMENT IS NEEDED; FOR MEDICINES, AN IMPROVED SUPPLY MECHANISM AT FACILITY LEVEL WILL ENHANCE CHWs PERFORMANCE

The supply chain for CHWs is rather simply structured and well organised.

It is established on four principles:

1. One national purchase and storage entity established in Kigali and managed by the RBC and CAMERWA;
2. Thirty-one district pharmacies which order and collect products at the CAMERWA warehouses in Kigali;
3. All HCs order from the district pharmacy; the district pharmacy supplies at HC doorstep;
4. CHWs order and receive their products from the HC.

The key aspect related to the contribution of procurement and supply to program effectiveness is the availability of essential products required by CHWs to perform their duties. Our assessment has focused on three distinct classes of products: equipment and tools; medical supplies; and medicines.

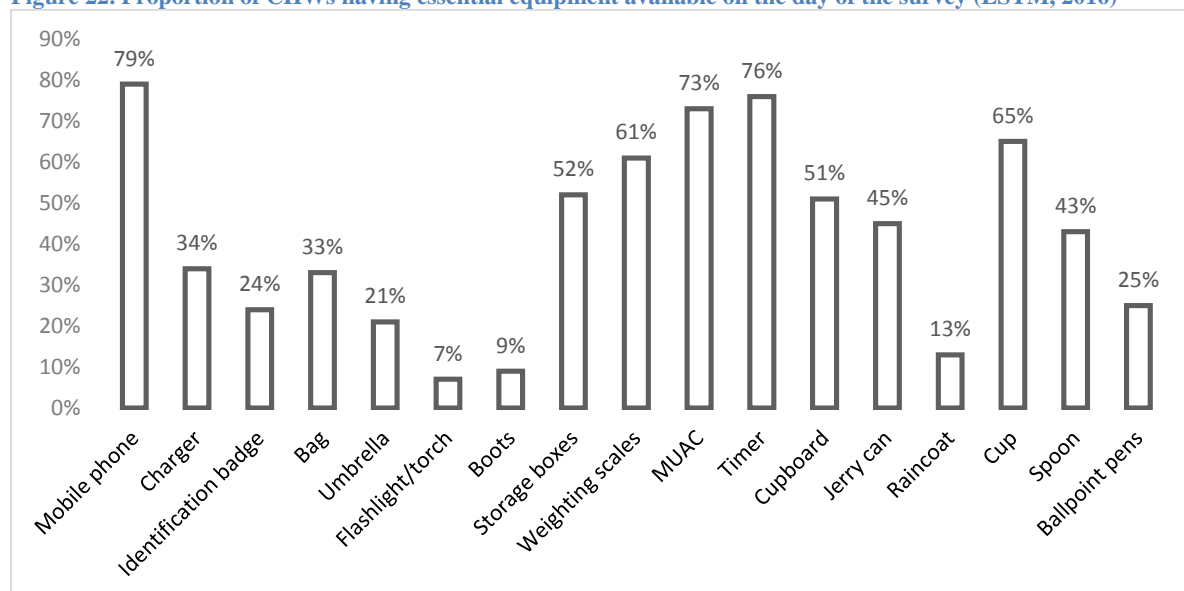
The primary source of our evaluation has been the analysis of our survey data, which triangulate findings from HCs and CHWs. The availability of products is assessed against standards defined by the CHP Strategic Plan.

Equipment

The availability of basic equipment and materials that CHWs should have at their disposal is behind expectations. Personal utilities (like telephone, boots, torch, etc.) are present, but only the telephone reach a high coverage (79%) where all other items are at a rate of a maximum of 30%. This is confirmed by similar low stock availability at the HC (around 29%) which is the entity that should resupply CHWs with these utilities. The most probable cause of this rather low presence is the fact that CHWs receive the items after the initial training and MoH does not yet have a policy of timely replacement of equipment items, and replacement stock at HC is low or totally absent.

The availability of instruments (scale, cup, timer, spoon, etc.) is on the critical low side where only the timer is available at a rate of 76%. This constraint is confirmed by a low number of HC which hold stock of these items. Over 80% of CHW have a storage box or a cupboard available; 79% of the cupboard are lockable. Both conditions are basic guidelines for good pharmaceutical storage practice. Over 80% of binomes have stock cards, and over 70% of HC hold replenishment stock. The availability of equipment for CHWs is summarised in **Figure 22** below.

Figure 22. Proportion of CHWs having essential equipment available on the day of the survey (LSTM, 2016)



Tools

The availability of essential tools is high for the “referral and counter referral forms” and the “monthly reporting forms”; however, all other tools are under an availability rate of 55%. On the contrary, most of these tools are available at a higher stock rates at HCs.

Medical supplies

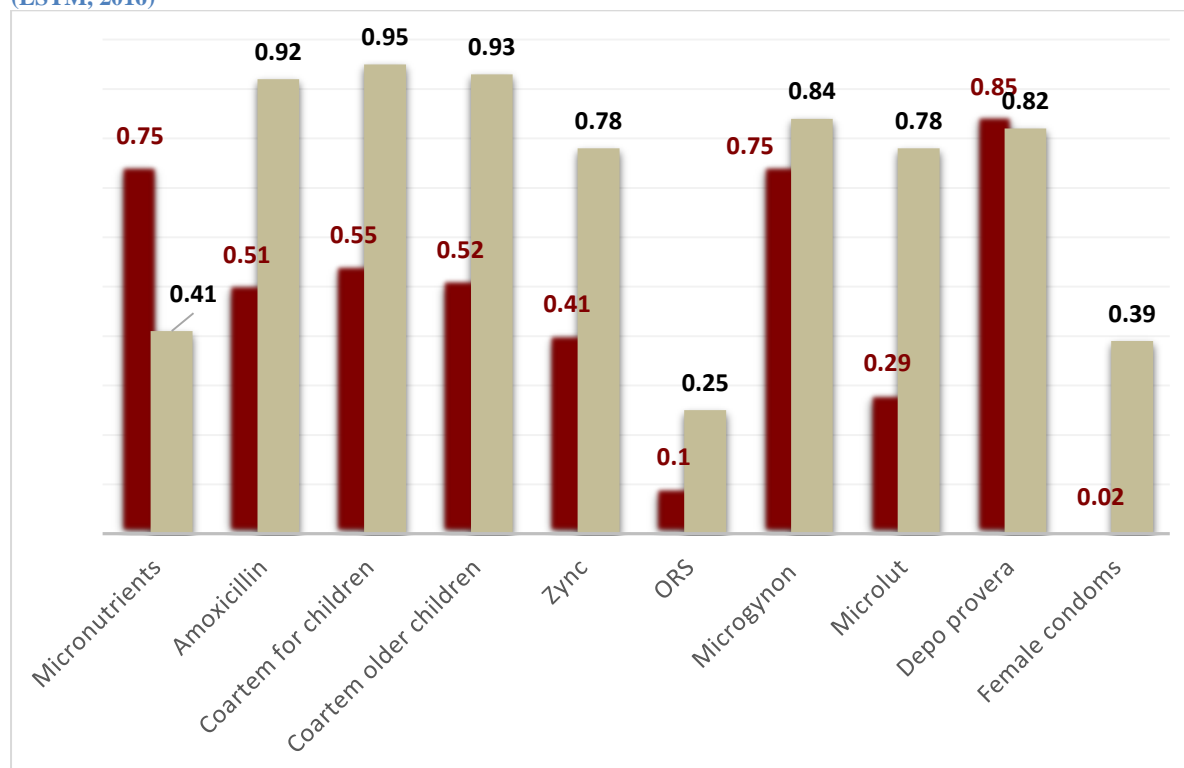
A high proportion of HC hold stock of the medical supplies the day of the visit (spot checked). Good stock (higher than 70%) is available for high rotation items like cotton wool, gloves, disposal box and RTDs. Low rotation items like thermometers and alcohol has reliable stock levels. Stock of sanitary towels is available in only around 32% of HC.

Medicines

High stock levels were found for medicines at health facility level: nine out of the 13 items have stock levels of 78% or higher. The other four items (Ongera, ORS, female condoms, Misoprostol) are under 41%. Such levels of stock-out are not reflected in equivalent availability of drugs at community level. As shown in **Figure 23** below, with the only exception of Ongera, the levels of stock available in communities were systematically and substantially lower than those reported at HF level.

This issue suggests that bottlenecks in the provision of medicines to CHWs have to be explored and resolved at a specific level of the procurement and supply management (PSM) system, i.e. the *last mile* connecting facilities to CHWs.

Figure 23. Proportion of HFs and of CHWs reporting having medical items in stock on the day of the survey (LSTM, 2016)



In addition, LSTM findings results reveal that during the quarter preceding the survey Misoprostol was available only in 15% of surveyed facilities; no CHWs surveyed had any stock of misoprostol at the time of the survey.

Our qualitative research confirms the findings obtained via survey.

Almost every CHW complained about their access to medications and shortage of supplies. When CHWs requested to refill their completed stocks, they had to wait for some time for the replenishment. CHWs described how they received medications for a month, but when these are finished they *'don't immediately receive'* more supplies, and in some cases this could take *'two months'* (CHWs in a FGD in an urban area of Kicukiro district).

"Drugs that go to community level do not provide benefits, so district pharmacy neglects them. So district pharmacy doesn't bring these drugs or only small quantity because it is not profitable" (a titulaire)

District level respondents were aware of the situation stating that the reasons were due to delay and stock-out at central level. According to the CHWs, the problem regarding supply shortage was compounded by the way the HC coordinates distribution of supplies to CHWs. During group discussions, CHWs explained how the HC staff waited to collate the requests from all CHWs before issuing re-supplies. For example, one group explained that individual CHWs are not allowed to replenish supplies, rather they must *'wait until all the CHWs come to get supplies'* (CHWs in a FGD in an urban area of Kayonza district). Additionally, lack of communication between the HC and CHWs could lead to inefficient methods for distributing new supplies. For example, CHWs described sometimes making long journeys to HCs only to find the stock had not arrived. Others suggested ways in which communication could be improved through use of SMS to inform CHWs when to collect new supplies, or delivery of supplies by health workers during supervision visits to CHWs.

In addition, to access the medicine supplies shortage, the other influencing factor regarding efficiency of the CHP was lack of support materials for the CHWs such as torches, transport means and cupboards for medicine

storage. CHWs complained that they could not accompany the woman who was in labour at night as it was so dark to travel at night. The community women that participated in the FGDs were aware of the situation as well. Hence, they felt that it would be useful if CHWs were provided some transport materials in order to provide better assistance to the community. In the words of a community woman: *'among the things that CHWs need is transport, and being paid on time and an ample salary because they sometimes look like they themselves have problems and asking for their assistance looks like burdening them'* (female community members in a FGD in an urban area of Kayonza district). Indeed, some community women would rather go straight to the HC as the CHWs could not provide any meaningful support.

FINDING 4.4. SUPERVISION IS PERFORMED AT GOOD QUALITY AND IS HIGHLY VALUED BY CHWs, BUT THE LACK OF SUFFICIENT IN CHARGES OF CHWs AT THE HF LIMITS ITS COVERAGE AND EFFECTIVENESS

Supportive supervision is a fundamental function of the program, since it offers on-the-job guidance to CHWs, allowing them to improve their performance.

The chain of supervision – as per CHP guidelines – is described earlier in this report and entails that District Level personnel supervising the in-charges at HF level; that the in-charge of CHWs at HC supervises each CHWs in his/her catchment area on a quarterly basis; and that cell coordinators supervise CHWs within their cell on a monthly basis.

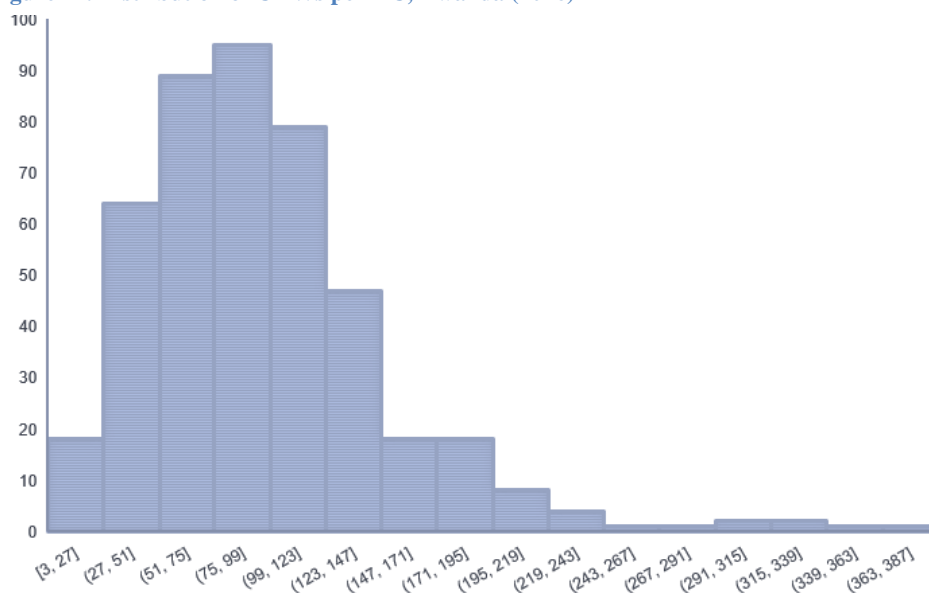
The capacity of delivering effective supervision is strictly associated to the model of the CHP. In fact, such model entails that there is one in-charge per HF, regardless of the number of CHWs deployed in the catchment area of the facility, and two cell coordinators per cell, regardless of the number of CHWs in the cell.

Data from SISCOM indicate that in 2015 alone, a total of 150,000 supervisory visits from the in-charge at HF were reported by CHWs, and a total of 200,000 visits from cell coordinators. This equals to an average of 3.4 visits per CHWs from the in-charge during the year (0.87 visits per quarter), and to 4.6 visits per CHW from the cell coordinator during the year (0.4 per month).

We have assessed supervision along various aspects of this activity, surveying both in-charges at the HF level and CHWs.

- On average, the n. of CHWs in the HF catchment area is estimated at 96 CHWs per HF, with a minimum of three and a maximum of 391 (Siscom database of active CHWs, accessed in September 2016). The distribution of CHWs by HC is presented in **Figure 24**. Since the task of providing supervision is regulated irrespectively of the size of the catchment area, some in-charges will be tasked to perform much more supervision than others because of the large number of CHWs that they need to supervise. On average, any in-charge of CHWs at HF has to supervise 100 CHWs per quarter, i.e. 33 per month. This entails visiting an average of 11 communities per month, in addition to any other task that the in-charges are assigned at the facility.

Figure 24. Distribution of CHWs per HC, Rwanda (2016)



- According to our survey, 16% of CHWs reported to have received no supervision during the 12 months preceding the survey. The proportion of CHWs who reported to receive 4 or more supervisions from the HF (one per quarter) was estimated at 40%.

- In-charges at HF are overall well equipped to provide good quality supervision. According to our survey, 82% of the in-charges reported to have received any training on the CHP. In particular, Seventy-seven per cent of in-charges of CHWs reported having received training on how to supervise CHWs on maternal and newborn health, 74% reported having received training on how to supervise CHWs on Community Based Nutrition Program, 72 % reported having received training on how to supervise CHWs on iCCM, 67% reported having received training on how to supervise CHWs on CBPFP, and 65% reported having received training on how to supervise CHWs on Early Childhood Development (ECD). Less than half of them reported having received training on how to supervise CHWs on TB (47%) and on how to supervise CHWs on Information Education Communication/BCC (46%).

- Tools and guidelines are available for supervision. Overall, the survey provides a positive picture of the availability of tools and guidelines for the supervision of CHWs. Ninety-nine per cent of in-charges of CHWs reported having tools and guidelines to supervise CHWs (**Table 14**). Also ninety-four per cent of in-charges of CHWs who reported having tools or guidelines to supervise CHWs were able to show their checklist to supervise iCCM. Eighty-six of them were able to show their check-list for the supervision of Maternal and Newborn health and their checklist for the supervision of TB. Seventy-three per cent were able to show their checklist to supervise CBPFP, and 71% their checklist to supervision CBNP.

Table 14 Availability of tools and guidelines for supervision, by type

	Proportion	95% CI	
<u>Proportion of in-charges reporting availability of :</u>			
<i>Checklist for iCCM</i>	0.94	0.86	0.98
<i>Checklist for family planning</i>	0.73	0.73	0.95
<i>Checklist for nutrition</i>	0.71	0.49	0.86
<i>Checklist for MNH</i>	0.86	0.72	0.94
<i>Checklist for TB</i>	0.86	0.74	0.93
<i>Other</i>	0.27	0.17	0.42

- The focus of supervision is well tailored to the cadre of CHWs receiving it. In fact, for ASM the most commonly reported health topic covered during the last supervision is maternal and newborn health (58%), whereas in the case of binomes, the most commonly reported health topic of focus during supervision is iCCM (47%) (**Table 15**). For both binomes and ASMs though, the most reported topic of focus during the last supervision visit is not related to any specific health intervention, and it is instead 'data and reporting' (66% of respondents).

Table 15. Topics covered during last supervision

	ASM		Binomes		TOTAL	
	Proportion	95%CI	Proportion	95%CI	Proportion	95%CI
iCCM	0.13	0.06; 0.26	0.47	0.31; 0.64	0.35	0.26; 0.47
Family planning	0.04	0.02; 0.13	0.25	0.18; 0.35	0.18	0.13; 0.26
Nutrition	0.16	0.07; 0.32	0.30	0.21; 0.42	0.25	0.17; 0.36
Maternal and newborn health	0.58	0.43; 0.72	0.10	0.05; 0.17	0.26	0.2; 0.34
ECD	0.14	0.06; 0.3	0.21	0.14; 0.29	0.18	0.12; 0.26
Data and reporting	0.71	0.49; 0.87	0.64	0.48; 0.76	0.66	0.53; 0.78
Provision of mosquito nets	0.03	0.01; 0.15	0.09	0.04; 0.19	0.07	0.03; 0.14
Other	0.24	0.08; 0.53	0.16	0.09; 0.27	0.19	0.11; 0.31

- The content and duration of supervision are satisfactory. Ninety-one per cent of CHWs reported that the supervisor checked their register during the last supervision visit; and 42% that the supervisors discussed areas in need of improvement, which had been identified and agreed during the previous visit (**Table 16**). Eighty-three per cent of CHWs also reported that the supervisor had used a checklist during supervision. Training material was only reviewed in 24% of cases, and visits to homes of patients was only performed in 10% of cases.

Table 16. Checks performed during last supervision

	CHWs	
	Proportion	95%CI
Register checked	0.91	0.84; 0.96
Discuss cases treated/referred by CHW	0.45	0.38; 0.51
Drug stocks checked	0.48	0.39; 0.58
Drugs storage checked	0.44	0.36; 0.52
Training material reviewed with CHW	0.24	0.18; 0.32
Visited house of a patient child	0.1	0.07; 0.15
Visited house of patient woman	0.1	0.06; 0.17

Checked areas in need of improvement as per last visit	0.42	0.32; 0.52
Other	0.02	0.01; 0.06
The supervisors used a checklist during last supervision	0.83	0.77; 0.88

The duration of supervision as reported by respondents varies according to the cadre.

In the case of binomes, 72% of respondents recalled that the supervision visit had a duration of more than one hour, whereas the majority of ASMs (58%) reported that the duration of the last supervision was between 30 and 60 minutes, hence shorter.

- Most CHWs, and both ASMs and binomes, rated the last supervisory visit as very useful for them (76%). Through the survey, we explored the main barriers encountered at health facility level in delivering regular supportive supervision to CHWs (**Table 17**). The most common barrier reported by in-charges of CHWs at HC, was to supervise CHWs is the lack of funds to cover travel expenses (93%), followed by difficulties related to the geographical accessibility of some areas (59%). Thirty-two per cent of in-charges of CHWs also reported the limited air-time to communicate by phone with CHWs. Twenty-one per cent reported the lack of time and 20% reported the absence of CHWs when the in-charges come to supervise them.

“The airtime given to the in-charge of CHWs is not enough. When it is finished, they use their own funds.” (a titulaire)

For supervision, we lack of time and resources. We have 42 villages here while we only have one lab technician to do examens at HC and who needs to go to visit CHWs in 42 villages; we need also the transport for the staff (a titulaire)

Table 17. Most common barriers faced by in-charges of CHWs to provide supervision to CHWs

	Proportion	95% CI	
Barriers to perform supervision:			
Limited time	0.21	0.10	0.39
CHWs does not show up	0.20	0.12	0.31
Travel expenses	0.93	0.71	0.99
Geographical accessibility	0.59	0.42	0.74
Phone/network	0.27	0.14	0.45
Limited air-time	0.32	0.14	0.56
Other	0.28	0.15	0.47

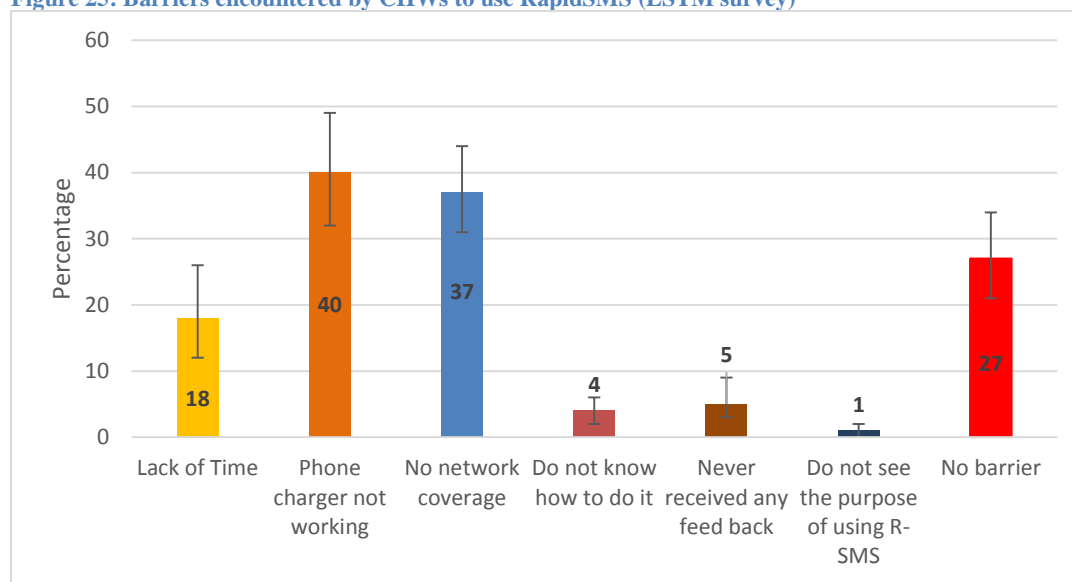
Overall, we conclude that supervision is of good quality; relevant; highly valued by CHWs; and that capacity and tools to provide supervision are largely in place. The major barrier affecting supervision lies in the model of service delivery, which entails a fixed number of in-charges irrespectively of the number of CHWs in his/her catchment area. This creates inequities in access to supervision for CHWs. Additional factors reported to influence supervision are input related, and have to do with resources available for in-charges to effectively travel to communities, and/or to communicate with CHWs. Insufficient resources to cover travel expenses, telephone and airtime costs are commonly reported as bottlenecks from the facility level.

FINDING 4.5: CHWS SPEND MUCH TIME IN REPORTING AND USE OF OLD PHONES, NON-FUNCTIONAL CHARGERS, ABSENCE OF ELECTRICITY, AND NETWORK COVERAGE IMPEDE REPORTING THROUGH RAPID SMS

LSTM survey results show that CHWs spend on average around one hour per week on reporting (combining both paper-based and RapidSMS) which represent 12% of the time that they dedicate to community health activities (excluding the time spent on CHWC). Some CHWs exceed far more this time. The main difficulty that they encounter is the absence of electricity to charge their mobile phone or non-functioning charger, followed by the absence of network coverage (**Figure 25**). Most of the CHWs have been recruited before 2010, therefore the mobile phones that they were given are worn out. LSTM survey shows that only three-quarter of CHWs own a mobile phone and only one-third own a charger.

These findings are confirmed by Mwenda’s study⁴⁶ that assessed the fit of RapidSMS for maternal and newborn health. *“Charging mobile phones was a challenge for all respondents and often entailed walking for more than an hour to charge at a cost of 100 RWF (...) To overcome this challenge, CHWs used colleagues’ phones to send their reports or swapped SIM cards. Exchanging phones has implications in terms of data protection as sensitive personal information about clients can be accessed by non-intended users of the system”* (Mwenda, 2016, p.45). However, CHWs in FGDs value the use of RapidSMS for calling ambulance for emergencies. Some even suggested that communication with HC could be improved through RapidSMS to inform CHWs when to collect new supplies, or delivery of supplies by health workers during supervision visits to CHWs.

Figure 25: Barriers encountered by CHWs to use RapidSMS (LSTM survey)



At national level, respondents felt that information were not used enough at sub-national level, even though the CHWs have collected and reported the information. More importantly, CHWs complained at not receiving any feedback about the quality and information they provided. At cell and HC, cell coordinators, in-charge of CHWs, and titualires complained about the poor quality of CHWs reports, particularly in regard to their medicine request and consumption.

“The main challenge is when they are reporting, they report wrong data.” (Cell coordinator)

⁴⁶ Mwenda, P. (2016) Assessing the fit of RapidSMS for maternal and new-born health: perspectives of community health workers in rural Rwanda. *Development in Practice*. 26 (1), 38-51. Available from: <http://www.tandfonline.com/doi/abs/10.1080/09614524.2016.1112769> [Accessed 12th February 2016]

FINDING 4.6: COORDINATION MECHANISMS ARE SOLID AT NATIONAL AND SUB-NATIONAL LEVEL BUT THERE IS ROOM FOR IMPROVEMENT BETWEEN HC AND COMMUNITY.

At sector level, HCs are supposed to organise one coordination meeting with CHWs at the end of each month. However, LSTM survey shows that the average number of coordination meetings during the quarter preceding the survey was below three (2.5). The attendance rate of active CHWs to coordination meetings is quite high (84%), despite that, only 14% of HCs provide travel allowances to CHWs to attend the coordination meetings. Most of the time, these allowances are granted by NGOs. The main reason for not attending coordination meeting is linked to the lack of time (**Table 18**).

Table 18: Reasons for not attending monthly coordination meetings

	CELL LEVEL Meetings		HC LEVEL Meetings	
	Proportion	95%CI	Proportion	95%CI
Another CHW from village represented you	0.01	<i>0.0; 0.08</i>	0.02	<i>0.0; 0.17</i>
No time	0.28	<i>0.14; 0.46</i>	0.22	<i>0.14; 0.33</i>
No transport means	0.09	<i>0.02; 0.29</i>	0.02	<i>0.0; 0.24</i>
No transport stipend	0.02	<i>0.0; 0.24</i>	0.03	<i>0.01; 0.2</i>
No incentives	-	-	-	-
Not informed about the meeting	0.04	<i>0.01; 0.2</i>	-	-
Meeting did not happen	0.11	<i>0.04; 0.29</i>	0.11	<i>0.02; 0.42</i>
Other	0.58	<i>0.36; 0.77</i>	0.65	<i>0.45; 0.81</i>

Even though there is an absence of specific guidelines on how CHWs from a same village should collaborate, CHWs in FGDs presented evidence of good mutual assistance between them.

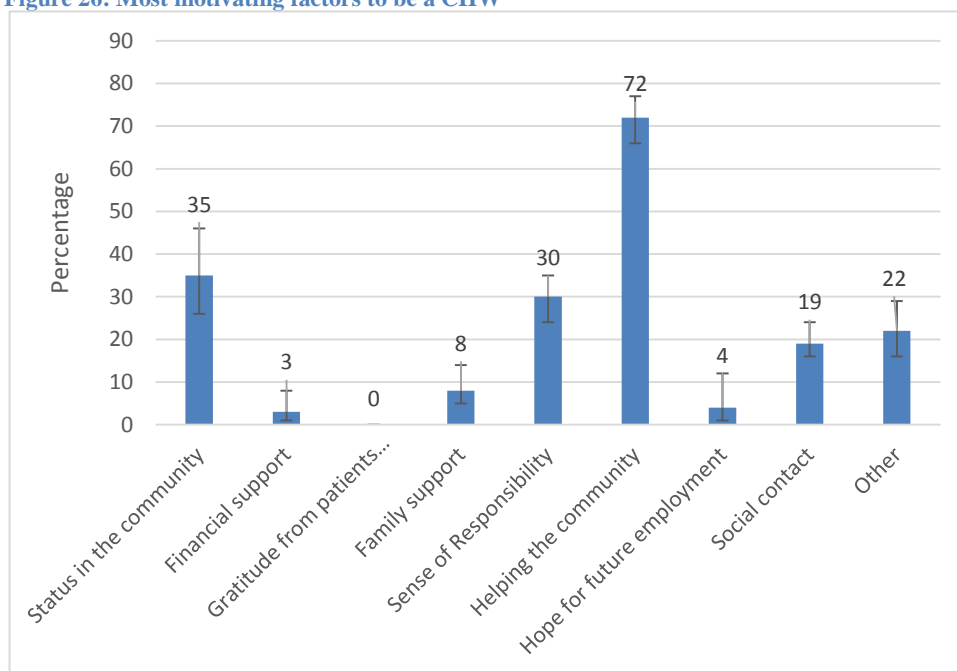
“In some cases, some of us don’t have the pills so what we do for those who come to us, is to send them to another CHW who have them” (CHW in a FGD in Kicukiro district).

CHWs also praised the support that they receive from village leaders and how they work hand in hand. The major issue in terms of coordination between the HC and the community is the supply chain (see finding 1.8) Regarding coordination at the national and sub-national level, most respondents felt that the existing coordination mechanisms were functional. However, a few respondents felt that the technical working group at the national level needed to be improved as different stakeholders and partners are not always reporting correctly.

FINDING 4.7. FINANCIAL INCENTIVES ARE NOT A MAIN SOURCE OF MOTIVATION TO BE A CHW BUT ARE A MAIN BARRIER TO DELIVER COMMUNITY HEALTH ACTIVITIES

LSTM survey shows that the main source of motivation to be a CHW is the willingness to improve the health status of family members and community members, and the social status (Figure 26). CHWs do not become CHW and maintain their role of CHW because of financial incentives. Indeed, most of CHWs have been recruited before the implementation of c-PBF and the creation of CHWC.

Figure 26: Most motivating factors to be a CHW



CHWs participating in the FGDs shared their perception of their role if there was no financial support in future. Almost every CHW felt that they had social obligations to remain as CHWs as they received trust from their community and they worked for social good. Though they did not receive any financial incentives for being a CHW, they received some social status within the community to be elected as a CHW. Hence, most CHWs commented that they would continue to serve as a CHW whether they received any monetary support or not.

“When I tell them that I am thinking about leaving my position, they beg me to stay because I have done so many things for them. And for that, I also cannot turn my back on their sincere request which means that I have reached at the level where money does not matter anymore.” (CHW in a FGD).

Only 31% of CHWs reported to be satisfied with their remuneration (including c-PBF individual incentives and benefits generated by CHWC). However, 92% reported that they would maintain their activities as CHWs if the incentives received through c-PBF as it stands were stopped. Less than one out of ten CHWs had considered to leave their position of CHW. The main reasons for considering to leave are the incompatibility with family life and the demanding amount of time required to deliver community health interventions and the weariness (Table 19).

Table 19. Incentives and job satisfaction (LSTM survey)

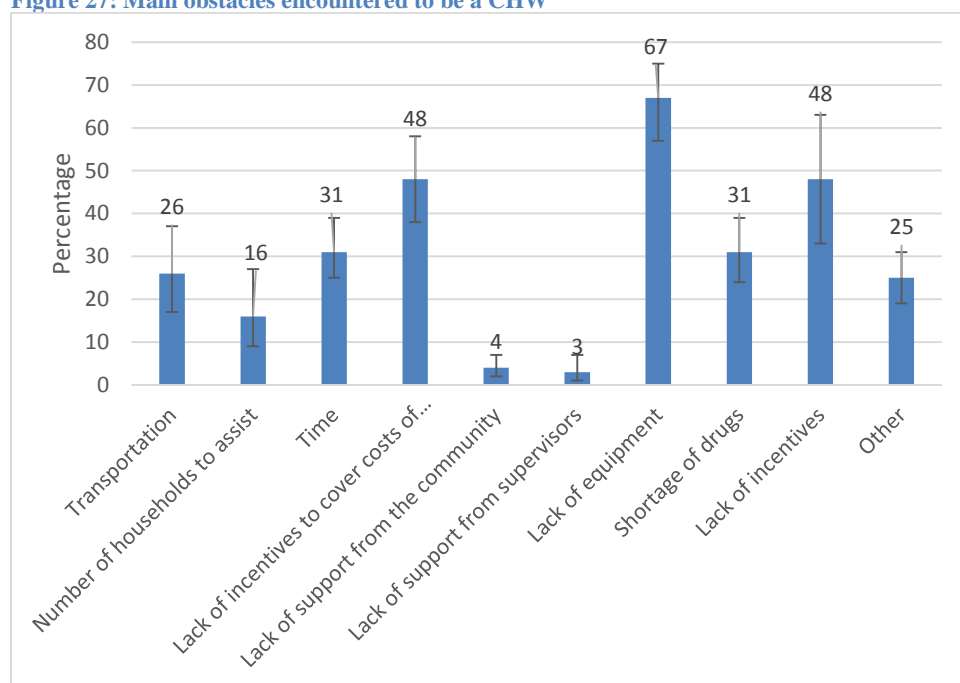
	TOTAL CHWs	
	Proportion	95%CI
CHWs reporting to be satisfied with their remuneration (incentives)	0.31	0.25; 0.38
CHWs who would continue in their role if the PBF incentives payments were stopped	0.92	0.86; 0.95
CHWs having considered to leave their job as CHWs at the time of the survey	0.09	0.06; 0.13
Main reasons for considering leaving the post of CHW:		
<i>Incompatible with employment timetable</i>	0.07	0.02; 0.26
<i>Incompatible with family life</i>	0.23	0.07; 0.56
<i>Change in family composition</i>	0.08	0.01; 0.34
<i>Change in professional life</i>	0.06	0.01; 0.29
<i>Starting studying</i>	0.03	0.0; 0.18
<i>Moving out of village</i>	-	-
<i>No carrier progression possible</i>	-	-
<i>Too much sacrifice for little incentives</i>	0.40	0.19; 0.66
<i>Unpredictability of incentives</i>	0.15	0.05; 0.4
<i>Too time demanding</i>	0.21	0.11; 0.37
<i>Lack of support of the community</i>	0.02	0.0; 0.3
<i>Lack of equipment and materials</i>	0.06	0.01; 0.33
<i>Lack of tools</i>	0.08	0.01; 0.34
<i>Lack of medical supplies</i>	0.03	0.0; 0.23
<i>Lack of essential drugs</i>	-	-
<i>Few patients</i>	-	-
<i>Lack of support from supervisor/from HC</i>	0.03	0.0; 0.17
<i>Weariness</i>	0.27	0.12; 0.5
<i>Discord among cooperative members</i>	0.12	0.04; 0.3
<i>Other</i>	0.11	0.04; 0.28

However, if financial incentives are not a main source of motivation to be a CHW, lack of financial incentives limit the actions of CHWs. Almost half of CHWs reported that lack of financial support to cover costs of transport, and more generally lack of incentives, are a main obstacle to carry out their activities (**Figure 27**). CHWs are constrained to balance their volunteering activities as CHW and their income generating activities. LSTM survey shows that CHWs spend on average 25 hours per week on IGAs (excluding activities linked to CHWC), 45 minutes per week on activities related to CHWC, and eight hours on community health activities (excluding activities linked to CHWC). In their study on assessing the effect of adding family planning service provision to CHWs duties in Rwanda, Chin-Quee et al (2016) found no significant difference between the control and case group in terms of average number of hours spent on community health activities. However, the group who provided family planning allocated differently the time spent on community health activities compared to the control group⁴⁷. The time that they spend on providing family planning was the time that they

⁴⁷ Chin-Quee, D., Mugeni, C., Nkunda, D., Uwizeye, M.R, Stockton, L and Wessons, J. 2016. Balancing workload, motivation and job satisfaction in Rwanda: assessing the effect of adding family planning service provision to community

do not spend on health promotion and community mobilisation. This suggests that CHWs have time constraints to balance workload as a CHW, and workload to generate incomes and family life. Increasing the number of packages of services will not necessarily result in increasing the number of hours they spend on community health activities, but rather a re-allocation of time spent to deliver specific packages of services. This statement is supported by LSTM survey showing that both binomes and ASMs spend on average approximately eight hours per week on community health activities despite the different nature of their tasks. Following this logic, the lack of financial incentives limits the CHWs in the time that they can dedicate to community health activities.

Figure 27: Main obstacles encountered to be a CHW



Community members in FGDs felt that it would be useful if CHWs were provided some transport materials and higher incentives in order to provide better assistance to the community.

“Among the things that CHWs need is transport, and being paid on time and an ample salary because they sometimes look like they themselves have problems and asking for their assistance looks like burdening them.” (Female community member in a FGD)

4.3. EFFICIENCY

EQ5 What are the program costs and its main cost drivers?

During the inception phase of the evaluation, key stakeholders highlighted the need to develop and implement a study that would provide information of the costs of the CHP in Rwanda. To the best of our knowledge, no comprehensive assessment of the CHP costs had been performed earlier, in the country.

In coordination with the MoH, with UNICEF and with LSTM, Management Sciences for Health took the responsibility of supporting the country in this exercise. At the time of writing this report, a “Costing Report of Rwanda’s CHWs Integrated Services” has been produced as a preliminary, draft version and is still unpublished. This section of the evaluation presents some of the key findings from such a preliminary report, and attempts to make use of the information generated through the costing study to enrich the findings of the evaluation. It should be noted that all the evidence produced through the “Costing Report of Rwanda’s CHWs Integrated Services” forms part of a separate study, and that all the information used in this report is a courtesy of Management Sciences for Health.

FINDING 5.1. THE ESTIMATED COST PER POPULATION OF THE CHP IN RWANDA IS IN LINE WITH COSTING BENCHMARKS AVAILABLE FOR AFRICA

The total actual cost of implementing the CHP is estimated at 26.1 ML USD, for the period 2014/2015 (from July 2014 to June 2015)

The outlook of the cost structure of the program as estimated via MSH study is presented in **Table 20** below, by program and by major activities.

Table 20. Total and Unit cost of Community Health program by service package (Source: MSH preliminary data; USD, 000)

Program Components	CBNP	CBP	C-MNH	HIV	iCCM				Total
					TB	Malaria	Pneum	Diarr	
Program Admin	1,342	771	2,090	689	133	629	460	476	6,590
Staff Training	824	15	44	9	1	6	5	5	910
CHW Training	304	261	480	193	27	162	118	123	1,668
PBF	571	473	690	612	85	287	210	217	3,147
Meds & Supplies	0.0	3,683	0.0	0.0	36	293	179	234	4,425
Materials, equip & tools	2,294	37	1,725	0.0	1	595	211	115	4,978
Campaigns	29	24	56	32	4	15	11	11	183
M&E, superv.	1,566	199	1,748	294	40	131	96	99	4,173
Total cost	6,931	5,463	6,832	1,829	329	2,118	1,291	1,280	26,075

The estimates provide some useful evidence:

- In the National Community Health Strategic Plan, the CHP budget was estimated at 57,420,372,004 RWF, which was the equivalent of 91.8 ML USD at the exchange rates of 2012⁴⁸. Such budget estimates were developed for a 5 years’ period (from 2013/2014 to 2017/2018), implying therefore an annual budget estimate of approximately 18.5 ML USD.

⁴⁸ Exchange rate as of 31 December 2012, access at: http://www.exchangerates.org.uk/USD-RWF-31_12_2012-exchange-rate-history.html

The current cost estimates for the period 2014/2015 are 40% higher than the original budget.

- With approximately 45,000 CHWs active in the country, the average cost of the program is of approximately 580 USD per CHW per year (48 USD per month); the evidence on cost of CHWs program is not vast, but some reports⁴⁹ present estimates from other regions of average annual costs per CHW ranging from 170 USD (India) to 745 USD per year (Pakistan). Rwanda costing data appear to be in line with such range, although it should be noted that the cost for the Pakistan model includes a fixed payment of a salary of 30 USD per CHW per month.

A recent modelling exercise that attempted to estimate the financial implications of scaling up CHWs in Africa⁵⁰, suggest that after 2015 the annual average cost of maintaining a CHW will be estimated at 3,750 USD per year. Cost data from Rwanda are largely below this estimate.

- With an estimated population of 11.7 ML inhabitants in 2015 in Rwanda, the CHP costs on average 2.2 USD per inhabitant. Estimates produced by McCord et al⁵¹, which include a fixed remuneration of 80 USD per month, project the cost of scaling up CHWs in sub-Saharan Africa at an estimated 2.72 USD per year. Given that such figure includes a fixed salary component, which is not part of the Rwanda CHP model, the average cost per capita of deploying CHWs in Rwanda seems slightly higher than the proposed benchmark but overall in line with it.
- More importantly, with a GGHE estimated at 20 USD per capita in 2014⁵², available cost estimates entail that if the program was fully funded by domestic resources, it would absorb approximately 10% of the envelope available to the health sector.

FINDING 5.2. THE COST STRUCTURE OF THE CHP IN RWANDA IS IN LINE WITH AVAILABLE ESTIMATES FOR AFRICA

The modelling exercise developed by McCord et al presents an estimate of the cost structure of a “CHWs model system”. Such ‘CHWs model system’ is based on a design drawn from lessons learned from various programs across Africa, and presents features that do not allow an immediate comparison with the case of Rwanda, including:

- A density of one CHW for 650 rural inhabitants;
- Training duration of three months residential (plus nine months on the job);
- Monthly salary of 80 USD for each CHW.

With that in mind, the overall cost structure of this hypothetical model system presents a cost distribution which entails:

- Approximately 50% of the costs related to supplies;
- Approximately 15% of the costs related to administration/overheads;
- Approximately 25% of the costs associated to salaries.

The Rwandan model presents very similar features with regard to administration costs (23%) and costs of procurement and supplies of medicines and equipment (40%). The cost structure differs from the benchmark model because of the volunteer design in Rwanda, which relies purely on performance-based incentives (8%).

⁴⁹ Perry et al. Financing Large Scale Community Health Workers Programs. Accessed at: http://www.mchip.net/sites/default/files/mchipfiles/05_CHW_Financing_0.pdf

⁵⁰ McCord et al. Deployment of Community Health Workers across rural sub-Saharan Africa: financial considerations and operational assumptions. Bulletin of the World Health Organization 2012;91:244-253B

⁵¹ McCord et al. Deployment of Community Health Workers across rural sub-Saharan Africa: financial considerations and operational assumptions. Bulletin of the World Health Organization 2012; 91:244-253B

⁵² WHO Global Expenditure database, accessed on 01/12/2014

FINDING 5.3. COST ESTIMATES OF THE DEPLOYMENT OF NEW CHWs ARE NEEDED TO ASSESS THE CURRENT MODEL

The cost of attrition, i.e. the cost incurred because of the need of deploying new CHWs to replace those who leave the program, is an important aspect for the policy maker.

Box 3 – The cost of attrition: what evidence do we have?

'High attrition rates have been reported in many CHW programs, as summarized by Bhattacharyya et al. (2001): Attrition rates for CHWs of 3.2 percent to 77 percent are reported in the literature, with higher rates generally associated with volunteers. One review (Parlato & Favin, 1982) found attrition rates of 30 percent over nine months in Senegal and 50 percent over two years in Nigeria. CHWs who depend on community financing have twice the attrition rate as those who receive a government salary. In the Solomon Islands, attrition was attributed to multiple causes in addition to inadequate pay, including family reasons, lack of community support, and upgrading of health posts (Chevalier et al., 1993). High attrition rates cause several problems. Frequent turnover of CHWs means a lack of continuity in the relationships established among a CHW, community, and health system. Considerable investment is made in each CHW, and program costs for identifying, screening, selecting, and training the CHW rise with high attrition rates. When CHWs leave their posts, the opportunity is lost to build on their experience and further develop their skills over time through refresher training. The very effectiveness of CHW work usually depends on retention. In Bangladesh's BRAC program CHWs "discontinued their work due to lack of time, lack of 'profit', and family's disapproval. The effects of the dropouts were decreased achievement of targets, and a loss of money in the amount of 24 USD per dropout [CHW] for their training and supervision" (Khan et al., 1998). The cost of high attrition rates is also discussed by Gilson et al., who found that, although volunteer programs were cheaper in terms of salaries, "very high attrition rates mean not only that frequent training of new volunteers is required, but also that it is difficult to keep track of volunteers and to judge their usefulness" (Gilson et al., 1989).⁵³

At the time of writing this report, the cost estimates produced by MSH did not present standard costs (cost of the program as per its intended design), but actual costs as per current implementation arrangements. This did not allow for a detailed analysis of the costs of deployment of new CHWs.

From preliminary available data, we can infer the following:

- The full cost of equipment for any newly deployed CHWs ranges from 540 USD for binomes to 570 USD for ASMs, taking into account the standard list of equipment that is in principle to be provided to each of the two cadres after deployment, and using MoH unit costs as a reference;
- FGDs conducted by LSTM revealed that in most cases, newly recruited CHWs receive equipment from the ones whom they are meant to replace. However, there is no guideline on CHWs replacement, nor any estimate is available of what is the average expenditure incurred to replace equipment when a new CHWs is deployed to substitute another.
- We can estimate that, with an attrition rate of ca. 10% per year, ca. 4,500 new CHWs will be deployed. The expenditure needed to procure equipment for new recruitments will therefore range from:
 - o Min: no expenditure, in the hypothesis that new CHWs receive all the equipment from their predecessors;

⁵³ Adapted from: Lehmann et Al. Community Health Workers: What do we know about them? World Health Organization, 2007

- Max: (540 USD x 3,000 new binomes) + (570 USD x 1,500 new ASMs) = 2.5 ML USD per year in the hypothesis that all recruits need full equipment replacement, and that the attrition is linear with the current distribution of ASMs and binomes in country
- The other cost category associated directly with attrition is training. In 2014/15, the program spent 1.6 ML USD in training. We cannot conclude from the available data whether all the training costs were associated with new recruitments. We can infer that this is the maximum theoretical cost of training associated with new recruitments, as per available evidence.
- In light of the above, although there are strong limitations to the analysis presented above, available data suggest that the cost of attrition may range between 1.6 and 4.1 ML USD per year. This entails that such cost ranges from 6% to 15% of the total cost of the program, without accounting for the indirect costs associated to managing the process of recruiting and training new volunteers.

FINDING 5.4. INFORMATION ON FUNDING SOURCES NEEDS FURTHER ASSESSMENT

The costing of the CHP performed by MSH assessed the availability of data regarding funding sources that support the program, and attempted to quantify the financial support provided to the CHP by partners.

The exercise largely relied on the information available from the Health Resource Tracking Tool, which is a web-based platform used by the MoH to track health budgets and expenditure.

The results of the assessment revealed the following:

- In addition to the Government of Rwanda that funded 13% of the Community Health Program in 2014/15, a total of 26 external partners were identified as contributors in various capacities to the CHP. Of those, three funders (US Government, Global Fund, UNICEF) account for 75% of the total contributions to the program. Within such scenario, the funding model clearly appears to be inefficient, given the efforts most probably associated with the need of managing a multitude of donors to the program, which contribute for marginal amounts to it.
- The total resources tracked as annual contribution to the CHP account for 17.7 ML USD. The tracking tool does not take into account costs incurred by the Government which are not directly attributable to the program (eg. Staff remuneration) and possibly it does not include the costs of all the medicines used by the CHP. Hence, at the moment there is exhaustive picture about the sources of funding that sustain the CHP. This is a gap that will require immediate addressing from the MoH and partners, possibly via an exercise of reconciliation of the tracking tool and of the costing estimates.

FINDING 5.5. ALONE, THE PROFIT GENERATED VIA CHWs COOPERATIVES MAY NOT BE A VIABLE SINGLE STRATEGY TO SUSTAIN THE CHP

CHWs are organised in cooperatives. A preliminary, unpublished assessment of CHWs' Cooperatives⁵⁴ explains the mechanism of functioning of such cooperatives, and presents findings on their actual development, distribution and rentability.

⁵⁴ Centre for Policy Research and Capacity Development (CPRCD). A comprehensive assessment of community health workers' cooperatives in Rwanda. Draft, February 2016

- In 2015, there were 475 cooperatives in Rwanda. Each cooperative is supervised by a HC that serves a given catchment area. Each CHWC receives a payment through the c-PBF mechanism on a quarterly basis. Seventy per cent of these funds are earmarked for investment in IGAs, while 30% is shared among the members. The IGAs are found in virtually all sectors of the Rwandan economy (e.g. agriculture and food, livestock, rental of commercial houses, housing, and transportation).
- The assessment revealed that 33% of the cooperatives were generating enough income from their business to sustain profitable operations and distributed dividends to members, both in cash and kind. In this respect, the cooperatives are strongly encouraged to follow the guidelines on dividends which state that 20% of yearly net benefits need to be set aside in a legal reserve, 30% of are shared between members of the cooperatives and 50% are pooled in a reserve fund managed by MoH to sustain community health initiative.
- In 2012, Cooperatives enjoyed net profitability ratio of 1.01%, that is when net Profit is compared to total revenue. Net profit in 2012 was 110,200,650 RWF. In 2013, net profitability ratio was 2.81% and profit was 305,200,060 RWF. In 2014, net profitability ratio was 6.29% and profit was 683,320,800 RWF. The findings also show that 67% of the Cooperatives under the survey did not make profit and they were not able to give dividends to their members.

Available evidence can be used to produce some estimates on the prospective capacity of cooperatives to progressively absorb and sustain the costs associated with the CHP, in future.

Table 21 presents three scenarios, with regard to the income and the profit generated by cooperatives.

Table 21. Modelling of profit increase generated by cooperatives

	Current Scenario	Target scenario 1	Target scenario 2
Total Number of Cooperatives	475	475	475
% of cooperatives generating profit	33%	33%	100%
Profitability (2014)	6.29%	10%	10%
Total Income (USD)	13,367,663	13,367,663	40,508,070
Total Profit (USD)	840,826	1,336,766	4,050,807

- 1) The current scenario presents the current picture regarding the profit generated by cooperatives, which amounts to less than 1 ML USD per year as per findings available via draft cooperatives assessment reports. Under the assumption that the costs of medicines are a fixed variable, non-dependant on the mode of service delivery (CHWs or formal health system), the costs of the CHP (net of medicines) is of 21.6 ML USD as per MSH costing study. Under the current scenario, even if all profit generated from cooperatives was allocated to support the program, it would cover less than 3% of its annual costs.
- 2) Target scenario 1 presents a hypothetical situation in which the proportion of cooperatives generating income remains stable, but the net profitability rate of those cooperatives increases from 6.3% to 10%. Under such scenario, and again making the theoretical assumption that 100% of the profit generated by the cooperatives is allocated to sustain the CHP, such profit would cover 6% of the total program costs (net of medicines).

- 3) Target scenario 3 presents a more optimistic situation in which the proportion of cooperatives generating income is 100%, and the profitability is 10%. Income for the additional 67% of cooperatives included in the model is projected as a linear function of the income produced as per current scenario. Under such hypothesis, the profit generated by cooperatives would be able to support approximately 20% of the total cost of the CHP.

Although the exercise presented above remains purely theoretical, it provides clear evidence of the challenges ahead in sustaining the program, unless a mix of funding sources is identified to address the financial sustainability issue.

As per current available data on costs of the CHP and on income produced via IGA, the model of cooperatives alone does not appear to be a viable strategy in the medium terms to sustain the CHP at the current scale and as per current model of service delivery.

EQ6 Are the available resources (financial, human and commodities) efficiently used to achieve the program objectives?

Addressing this evaluation question entailed assessing – via available evidence – areas of potential efficiency improvements that can be explored as opportunities to redefine or streamline the inputs (resources) allocated to the program. We have identified 5 major areas where efficiencies can be potentially obtained. Exploring those areas more in-depth and modelling the costs of alternative scenarios is not within the scope of this study.

1 – Model of service delivery

SISCOM data provide the opportunity to estimate the average caseload per CHW deployed in Rwanda, per month. The estimates drawn from SISCOM 2015 have been triangulated with our survey assessment; the average monthly caseload of CHWs is shown below, in **Table 22**.

Table 22: Average monthly caseload of CHWs

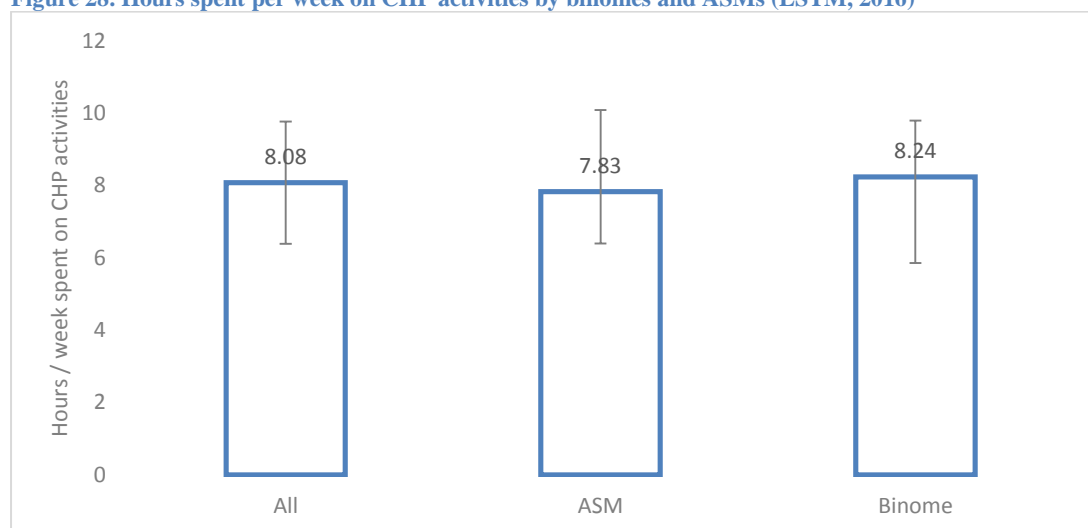
<i>Intervention</i>	<i>Caseload/CHW/month (SISCOM, 2015)</i>	<i>Caseload/CHW/month (LSTM, 2016)</i>
Cases 6-59 months with fever malaria presenting within 24 hrs	1.3	1.2*
Cases seen with diarrhoea 2-59 months of age (binôme)	0.3	0.2
Cases seen with pneumonia 2-59 months of age (binôme)	0.6	0.4
Number of pregnant women newly identified by ASM confirmed pregnant	1.4	1.8
Number of women within 4 months of pregnancy referred by ASM to ANC	1.0	0.7
N. Women accompanied at HF for delivery by the ASM	1.0	0.9
Number of women and child alive pairs accompanied to postnatal visit within 24 hours of home delivery	0.0	0.1
Number of FP clients new to the CHW after being seen at HF	0.5	3.0
Number of consultations for FP clients continuing in the CBFPF program	23.0	27.0
New suspected cases of TB referred to HF	0.2	N/A
TB cases followed at home by CHW (DOTS)	0.0	N/A
IEC sessions	0.7	N/A

**Mean number of cases of malaria treated in children Under-5*

Data shows that, with the only exception of consultations for family planning, under the current model each CHW deals with an extremely limited number of cases per month. The program success and its reach are largely due to the scale (number of CHWs deployed) rather than to the average performance of individual CHWs. In fact, our assessment of workload somewhat confirms these figures. As shown below in **Figure 28**, CHWs spend on average eight hours per week on activities related to the CHP, i.e. less than 2 hours per day on an average five days' week of work.

Although such data should be disaggregated more precisely by rural/urban area and by location, the national average estimates suggest that in principle, one potential avenue to enhance program efficiency is to deploy less CHWs who deliver more services, hence maintaining the level of reach unvaried.

Figure 28. Hours spent per week on CHP activities by binomes and ASMs (LSTM, 2016)



Whilst this consideration would obviously require a shift in the model of pure volunteerism currently underpinning the program, one may assume that a redistribution of tasks amongst less CHWs per community (e.g. one binome and one ASM) would significantly reduce variable costs associated to deployment, training, reporting, supervision, and coordination. Hence, the hypothetical additional costs of a theoretical fixed remuneration of CHWs may be recovered through the savings associated to the management of a smaller cadre of CHWs.

2 - Bundle of interventions offered by CHWs

Over the years, the scope of services offered by ASMs and binomes has increased. Prospectively, more programs may show interest in offering services at community level over time.

That said, a second area where efficiencies may be potentially sought has to do with a redesign of the package of services offered by CHWs.

A few considerations, in that sense:

- Qualitative research (FGDs) done at community level clearly indicate that communities value health promotion as the most important service offered by CHWs. Whilst treatment services are also used by communities, such use is much more limited.

- In general, our survey findings clearly show that CHWs do not feel confident in offering treatment services.
- For some of the services (PPH), the prevalence is extremely low and they are virtually not provided by CHWs. For instance, the evaluation could not find any evidence of misoprostol being currently offered to post-partum women at community level. Yet this intervention comes with costs, related for instance to training; to the supply of medicines; and to the risk of expiry of medicines given the very rare use of misoprostol.

Whilst the case of misoprostol is only an example and more analysis may be performed for other interventions (e.g. diarrhoea), the line of reasoning is that a rationalisation of the package of interventions may be a suitable avenue to obtain significant efficiencies for the CHP.

Box 3 - Enhancing efficiency of the CHP: what do stakeholders suggest?

Stakeholders at all levels provided suggestions on how the CHP could be reconfigured for greater efficiency. Suggestions from key informants included increasing numbers of CHWs, revising the package of services provided by CHWs, and directing the focus of CHWs role towards preventive services. Interview respondents participated in the evaluation discussed about the numbers of CHWs, especially to improve the efficiency of the CHP. There were participants who felt that the numbers of CHWs should be increased in order to overcome the workload they had. In the words of a national level respondent: *"sometimes everyone wants to use them...because everyone who want to come to the community...even out of the health sector want to use these people because they are reaching the communities very easily and then they know everyone..."*

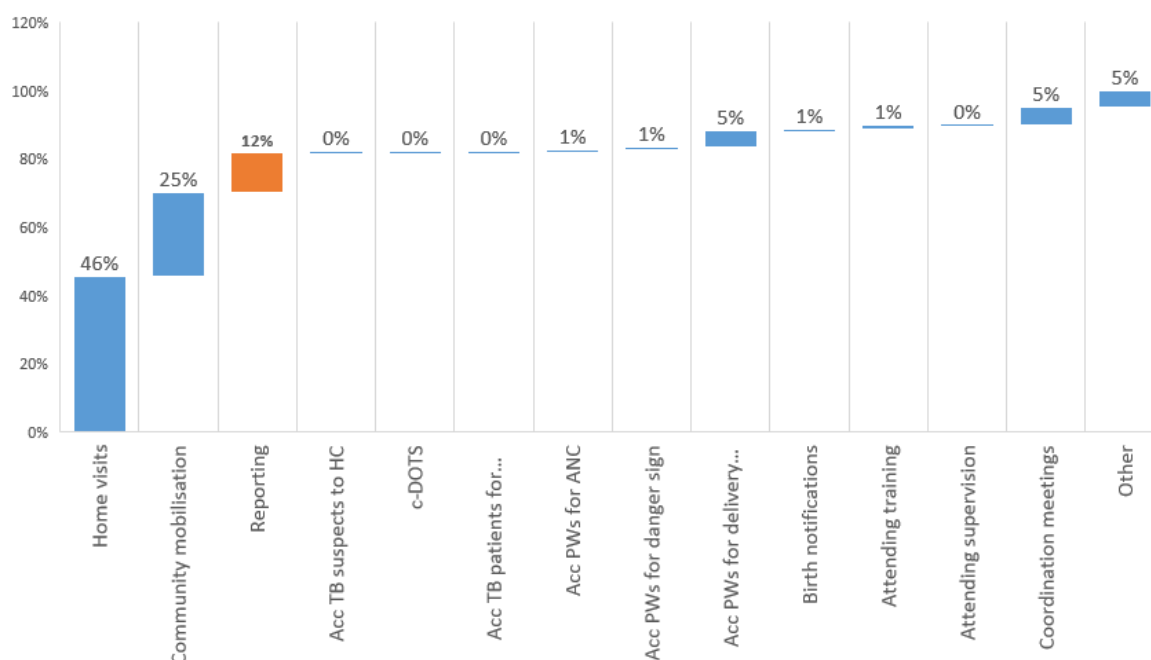
On the other hand, there were other participants who thought that they should not increase the numbers of CHWs. Instead, they perceived that the program should revise the package and reviewing the services which CHWs were asked to do. In the words of a district level respondent: *"I think reducing number will be good, because this what makes program strong...See exact package, they can provide, that is making an impact, that is manageable."*

Some national level respondents perceived that the CHP would be more efficient if CHW were only asked to do preventive measures. These respondents felt that the HCs could cover the curative health services for the community. Indeed, some district level respondents commented that asking CHWs to deliver curative activities required close follow-up and regular on-the-job training. By so doing, there would not have efficiency gaps due to supply shortages which the CHWs were currently facing. Having said that, there was one national level respondent who felt that the CHP was more cost-effective than the facility-based care. Hence, the country should plan properly in order to task shift some curative activities to the CHWs.

3 – Reporting

The mechanism of reporting is extremely well structured in Rwanda, and certainly a model in many instances for other countries of the region, in terms of accuracy, timelines and completeness of the data produced at community level. Yet, at the moment the CHP relies on a double system of reporting. One, SISCOM, is paper-based and aggregated data from individual CHWs registers into a summary form, reported monthly from each village to the cell, and from cell coordinators to health facilities. A parallel system, Rapid SMS, relies on real time reporting from CHWs on a limited number of cases, and it is an essential feature to allow for immediate referral of emergencies and to activate a response from the formal health system.

Figure 29. Proportion of total time spent by ASMs on various activities (LSTM, 2016)



As a matter of fact, as shown above in (Figure 29), reporting accounts for a significant portion of the time spent by CHWs in CHP activities, accounting for 10-15% of the total time volunteered for the program.

In addition, the use of two parallel systems requires a double investment in equipment and material. On one hand, the Rapid SMS entails providing phones, chargers and airtime to 45,000 CHWs. On the other, regular reporting generates equally substantial costs associated to the printing and distribution of a significant amount of registers and forms, as well as to the time spent at various levels of the system for aggregation and analysis of data.

Without having costing information available, we can still reasonably conclude that a process of harmonisation and of convergence of the reporting system into a single approach may entail significant efficiencies for the program.

4 – Procurement and supply management

A fourth potential area where significant efficiencies may be achieved has to do with the procurement and supply of medicines.

Our survey estimates revealed that 29% of binomes reported to have product in stock that had expired during the quarter preceding the survey. For those binomes reporting having drugs in stock which had expired, the most commonly reported drug expired is coartem (56% for primo hondu and 58% for primo tuku), followed by ORS (27%) and amoxicillin (21%).

The reasons for this issue may be multiple, as suggested by CHWs and HCWs interviewed during the evaluation (**Box 4**). Expiry of drugs may be due to the fact that drugs are distributed to CHWs who actually do not have cases to treat with the specific medicine; or due to inappropriate stock management from CHWs; or to the fact that the drugs distributed at community level have a short residual shelf life.

Box 4 - Enhancing efficiency in drugs management: what do stakeholders suggest?

A key factor CHWs identified as contributing to their poor access to drugs and supplies was that they often received medicines with short shelf life. This was significant in cases where CHWs did not have any client to prescribe that particular medication, and hence those medicines expired in their hands. CHWs felt that they were blamed for being ineffective in reporting and managing their medicine stocks, but they had never been asked to record the expiry dates of those medicines when they received them from the HC.

Key informants at facility level were aware of the short shelf life of medicines and stated that these were the items they received from the central medical stores. Regarding the CHW's access to medication, district level respondents felt that the CHWs did not have sufficient knowledge and skills to dispense all the medications and so they withheld some drugs to protect the community from inappropriate prescribing (one District Pharmacy Director).

Whatever the case, this area needs attention and possibly further assessments. Potentially reducing the problem of medicines expiry can save a substantial amount of resources to the program.

5 - Training

A fifth area of attention for the achievement of efficiency gains is the training. The current model entails that CHWs are in 'individual' packages, at health facility level, after their recruitment and following an initial induction training. LSTM survey reveals that the average time elapsed between the recruitment as CHWs and the induction training is three months. However, our analysis does not include the average time lapse between the induction training and the completion of all training packages. Having said that, the training component of the CHP presents various efficiency related issues: in first instance, multiple trainings are offered, of different duration and at different times (**Table 23**).

Table 23. CHWs' training in various CHP modules: additional information

	<i>Median duration of Training (days)</i>	<i>Incentives received to attend training*</i>		<i>Availability of training manuals on the day of the survey *</i>		<i>Any refresher received after training*</i>	
	Median	Proportion	95%CI	Proportion	95%CI	Proportion	95%CI
Nutrition	3	0.95	<i>0.89; 0.97</i>	0.56	<i>0.47; 0.66</i>	0.55	<i>0.44; 0.66</i>
Community Health information system	2	0.83	<i>0.68; 0.92</i>	0.18	<i>0.06; 0.42</i>	0.47	<i>0.27; 0.69</i>
Rapid SMS	2	0.95	<i>0.88; 0.98</i>	0.54	<i>0.42; 0.64</i>	0.38	<i>0.26; 0.52</i>

iCCM	3	0.86	<i>0.76; 0.93</i>	0.41	<i>0.30; 0.53</i>	0.46	<i>0.32; 0.61</i>
Home based MNH	3	0.95	<i>0.89; 0.98</i>	0.93	<i>0.88; 0.96</i>	0.36	<i>0.24; 0.51</i>
Prevention of PPH	2	0.94	<i>0.71; 0.99</i>	0.53	<i>0.41; 0.65</i>	0.12	<i>0.04; 0.32</i>
Family Planning	5	0.97	<i>0.89; 0.99</i>	0.61	<i>0.49; 0.71</i>	0.30	<i>0.22; 0.4</i>
Health Promotion	2	0.93	<i>0.48; 1.0</i>	0.07	<i>0.02; 0.22</i>	0.27	<i>0.09; 0.57</i>
TB DOTS	1	0.87	<i>0.81; 0.91</i>	0.10	<i>0.06; 0.15</i>	0.28	<i>0.16; 0.44</i>
Mental Health	1	0.85	<i>0.76; 0.91</i>	0.57	<i>0.4; 0.73</i>	0.19	<i>0.08; 0.39</i>
Gender based violence	2	0.88	<i>0.76; 0.94</i>	0.11	<i>0.03; 0.36</i>	0.26	<i>0.11; 0.51</i>
Hygiene and sanitation	2	0.74	<i>0.53; 0.88</i>	0.18	<i>0.14; 0.23</i>	0.25	<i>0.17; 0.35</i>
Early Childhood Development	3	0.89	<i>0.81; 0.93</i>	0.53	<i>0.4; 0.66</i>	0.33	<i>0.26; 0.41</i>

**the coverage refers only to those CHWs who reported to have been trained on each specific module*

This approach does not only dilute the effectiveness of training (not all CHWs are actually trained in all packages), but does also generate a multiplication of costs related to: travel of CHWs at different times for different trainings; design, printing and distribution of training material and packages per individual modules; time spent by CHWs in communities without being able to deliver services, amongst others.

Alternative, integrated packages of training might be considered as an option that could potentially replace the current model – on the line of the approach used in many countries in Africa. Also, and concurrently, distance learning via electronic devices might be considered as a valid replacement option to refresher courses, saving time and resources to the system. A plethora of e-learning packages have recently been developed and tested for use in remote settings, and piloting this approach may be a valid initiative to explore program savings.

4.4. IMPACT

EQ7 Has the CHP contributed to improve the health status of women, newborn and children in Rwanda, by increasing coverage of evidence based, high impact maternal, newborn and child health interventions?

Our assessment of impact entailed making an evidence-based judgement about whether the CHP has contributed to improving maternal, new born and child health outcomes in Rwanda. Measuring the ‘amount’ or degree of such impact is not within the scope and the proposed approach for the evaluation.

What can we infer about the contribution of the CHP to MCH in Rwanda?

At first, the evidence provided so far in this report testifies that the program relies on a solid, coherent ToC which is implemented at scale across the country. And that, despite gaps and areas of improvement highlighted earlier in various sections of the report, CHWs do actually provide a range of services that are valued and appreciated by communities, and that are well connected to the formal health sector.

This has happened for a period of 20 years, at various degrees and with an increasing number of tasks for CHWs, and therefore it is opinion of the evaluators that CHWs have been an active part of any progress that the country has achieved in terms of health and well-being of its population from the immediate post-genocide years to date.

Without any attempt to draw conclusions on attribution of progress to the CHP, what else can we infer based on available data and research?

FINDING 7.1. ACCESS TO DIAGNOSIS AND TREATMENT OF CHILDHOOD ILLNESS HAS INCREASED AFTER THE INTRODUCTION OF ICCM AT COMMUNITY LEVEL

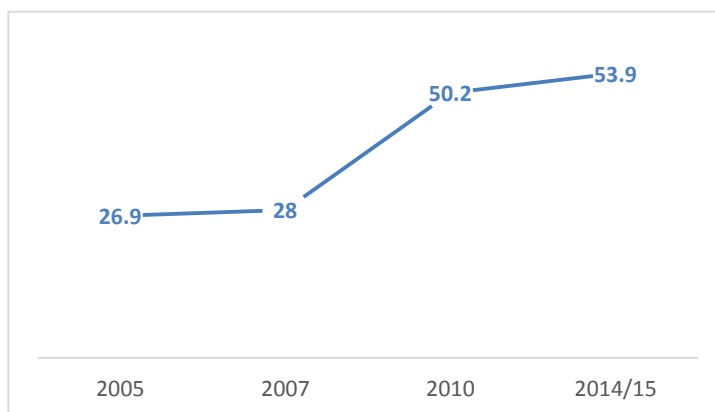
Available data from the Rwanda DHS reports 2005; 2007-8; 2010; 2014-15 provide some indicative evidence that suggests a positive contribution of the introduction of iCCM on the care seeking behaviours of caretakers of children under the age of five.

Figure 30 plots the proportion of children with symptoms of ARI for whom advice or treatment was sought from a health facility or provider.

We have used the average annual rate of change as a method of analysis, which we calculated by subtracting the end line point estimate from the baseline point estimate, divided by the total number of years within the time period of analysis, for three time periods:

- 2005 to 2007/8 (pre-introduction of iCCM);
- 2007-8 to 2010-11 (introduction and scale up of iCCM);
- 2010-11 to 2015 (iCCM implemented)

Figure 30. Care seeking for children with ARI symptoms (RDHS)



This measures the average speed of change of the indicator during a certain time period.

The average annual rate of change was of 0.6 percentage points per year during the period 2005-2007/8; of 7.4 percentage points during the period 2007/8 to 2010/11, i.e. the period of introduction of iCCM at community level. Increase in coverage then plateaued during the period 2010/11 to 2015, at an average rate of change of 0.7 percentage points per year. During the same period, data shows that the proportion of children for whom care was sought from a community health worker was also stable (13% in 2010/11; 14.2% in 2014/15). No data is available for 2007/8 when iCCM was first introduced in Rwanda.

Whilst this analysis is not meant to prove any association or causation, and hence cannot measure attribution of this change in outcome to a specific intervention, it certainly supports an argument of positive contribution of community diagnosis and treatment of childhood illness to an overall change in outcomes in Rwanda. During the period of its introduction, the overall coverage in country raised significantly.

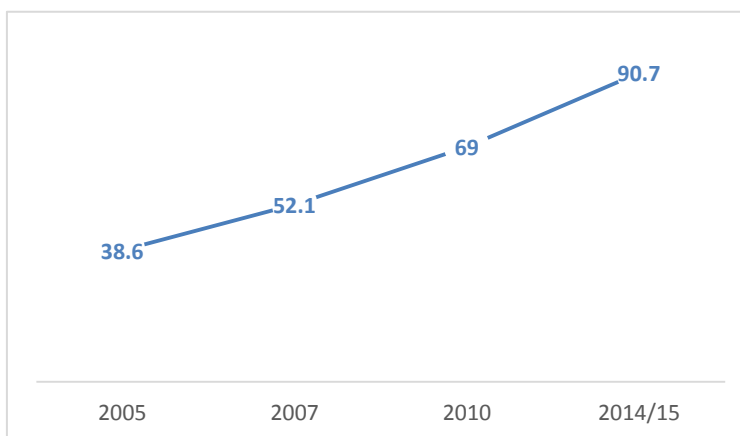
To complement and reinforce such descriptive analysis, an ad hoc study implemented in Rwanda⁵⁵ assessed the impact of iCCM on care seeking behaviours and on mortality, concluding the following *“Between 2008 and 2011, Rwanda brought iCCM to scale in all 30 of its districts nationwide. We find significant increases in community-level treatment rates for childhood diarrhoea and pneumonia during the 1-year period after iCCM implementation in each district. These increases correspond with decreases in under-5 community mortality, total mortality, health centre use, and total health facility use. Moreover, the decreases in total under-5 mortality and health facility use are greater than would be expected due to baseline trends.”*

FINDING 7.2. FINDINGS FROM AN LSTM ANALYSIS OF SECONDARY DATA SUGGEST A SIGNIFICANT, POSITIVE EFFECT OF THE INTRODUCTION OF MNH AT COMMUNITY LEVEL.

Can any evidence be produced to support an argument of positive contribution of the CHP to maternal and newborn health outcomes in Rwanda?

Using skilled attendance at birth as a tracer indicator of coverage for reproductive health interventions, we observe a steady trend of increase pre and post introduction of the MNH package at community level (2010). Per se, such steady increase already represents a suggestive index of success of the c-MNH program, since the ‘relative value’ of increasing from 40% to 70% in SBA (2005 to 2010/11) is different from that of increasing from 70% to 91% (2010-2015), in that such additional increase requires a much more refined approach, which permits to reach the hardest populations to reach with targeted interventions.

Figure 31: Trends in skilled birth attendance (SBA) from 2005-2015 (DHS)



Using skilled attendance at birth as a tracer indicator of coverage for reproductive health interventions, we observe a steady trend of increase pre and post introduction of the MNH package at community level (2010). Per se, such steady increase already represents a suggestive index of success of the c-MNH program, since the ‘relative value’ of increasing from 40% to 70% in SBA (2005 to 2010/11) is different from that of increasing from 70% to 91% (2010-2015), in that such additional increase requires a much more refined approach, which permits to reach the hardest populations to reach with targeted interventions.

To complement such a statement, LSTM assessed the effects of the introduction of the MNH program at community level on institutional deliveries and maternal mortality.

⁵⁵ Mugeni et Al. Nationwide implementation of integrated community case management of childhood illness in Rwanda. Global Health: Science and Practice 2014 | Volume 2 | Number 3

To perform the analysis, the evaluation team worked alongside the BCs to reconstruct the detailed chronology of introduction of the MNH package at sub-district level, in each of the 41 sub-districts of Rwanda. The intervention was in fact introduced in a phased manner in the country, during the period 2010-2014. Training did occur in June 2015 in one district (Kigeme). Using available data from SISCOM on the monthly numbers of deliveries at health facilities, we performed a retrospective analysis using the stepped wedge structure of the data available in mixed effects Poisson models to assess the effects of the introduction of c-MNH on such outcome and impact measures.

To perform the analysis, the data extracted for each indicator was analysed using methods outlined by Hemming et al (2015)⁵⁶.

The following variables were used in the model:

From SISCOM:

- Number of health facility deliveries
- Number of maternal deaths

From the Census:

- Projected population of women of reproductive age

From training records:

- Month and year in which MNH training was first provided to CHWs

Each of the two variables sourced from SISCOM were analysed using Poisson models which accounted for the clustering of responses over time using Stata version 14.1. The following potential sources of variation were included in the models:(sub-) district, month of the training (varying from 1 to 41) and whether the MNH training had been delivered. To account for variation between districts in population size (exposure), the numbers of women of reproductive age were used as the exposure variable for the outcome.

Incidence rate ratio was used as the outcome measure for each variable analysed in the study. The analysis was performed using data from August 2012 to December 2015, as data on health facility deliveries were only available from August 2012. Twenty-six sub-districts had already introduced MNH training between 2010 and July 2012, therefore 15 sub-districts were included in the analysis for deliveries at health facilities and maternal mortality.

The findings of the assessment suggest the following incidence rate ratios:

Outcome (number of sub-districts; number of observations)	Post-training (vs (pre)) study month included	P value
Deliveries at health facilities (15; 600)	1.06 (1.04 – 1.07)	<0.001
Maternal mortality	0.88 (0.59 – 1.30)	0.52

All analysis was performed using mixed effects Poisson models, and include a fixed effect for month of training and treat (sub-)district as a random effect. It should be noted that the data is observational in nature; the timing of the delivery of training was not randomised to the sub-districts, thus any systematic reasons for the timing and sequence of delivery training may undermine the validity of the analysis, which is based on random assignment of the month of training.

⁵⁶ K Hemming, T P Haines, P J Chilton,, A J, Girling and, R J Lilford. The stepped wedge cluster randomised trial: rationale, design, analysis, and reporting. [BMJ 2015;350:h391](https://doi.org/10.1136/bmj.h391) doi: 10.1136/bmj.h391

The analysis suggests that there is significant evidence of an increase of the incidence rate ratio of facility deliveries post-introduction of the MNH training. Translated in more simple terms, **the rate of institutional deliveries increased significantly of 6% post introduction of the intervention**. The rate of maternal mortality decreased from 12% post-introduction of the MNH training, but this result is not statistically significant.

FINDING 7.3. THERE IS EVIDENCE OF A REDUCTION OF INEQUITY IN ACCESS TO SERVICES FOR URBAN AND RURAL POPULATIONS

An important measure of progress, besides absolute coverage, is the equitable distribution of such coverage amongst different strata of the population.

We explored the differences in access to and utilisation of maternal and child health services amongst rural and urban areas, using data from the DHS 2010-11 and the DHS 2015.

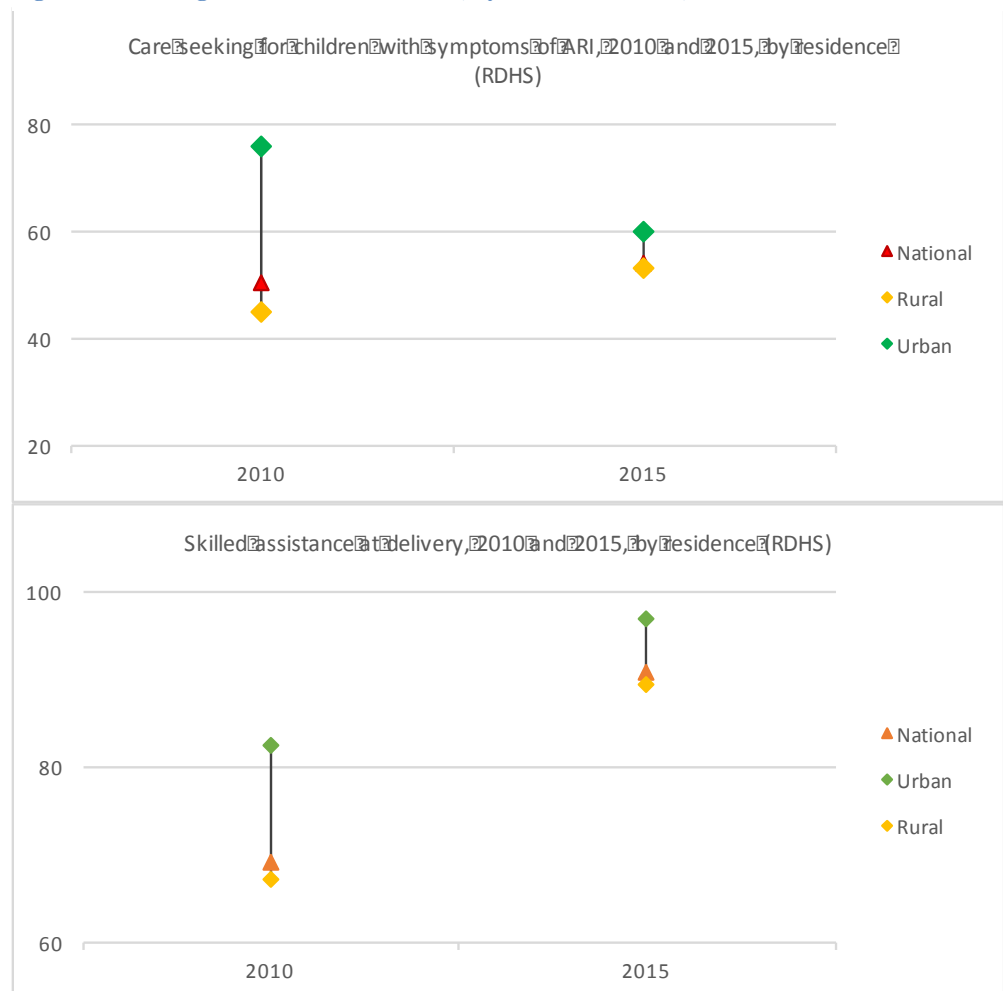
Figure 32 plots coverage levels for two tracer indicators of access: care seeking for children with symptoms of pneumonia; and skilled attendance at delivery.

For both indicators, the analysis shows that not only the national coverage levels (red triangle) have increased from one time-period to the other, but also that the equity gap in access between urban (green diamond) and rural (yellow diamond) populations has

substantially reduced from one time-period to the other, for both indicators.

Although once again this gain cannot be attributed to the work of CHWs alone, it is important to assess this dimension and to observe that no matter what is the ‘portion’ of the contribution of the CHP to change, there is evidence that such change is going in the right direction.

Figure 32. Coverage of selected intervention, by residence (RDHS, 2010 and 2015)



FINDING 7.4. COMMUNITY HEALTH ACTIVITIES MAY POTENTIALLY LEAD TO UNINTENDED IMPACTS

The implementation of community health activities may theoretically lead to unintended impacts.

‘Negative program theory’, a technique developed by Carol Weiss, shows how it might produce negative impacts. A negative program theory is constructed using the same processes used to construct a positive program theory - talking to people about how the intervention works, observing the program (if it is currently running), drawing on previous research and literature, and using analogies with similar programs - but with possible negative impacts at the end of the logic model rather than the intended positive impacts.⁵⁷

Although a full ‘negative program theory’ has not been developed for this evaluation, below is an overview of possible unintended consequences of the CHP design and current implementation, as per available evidence derived from the evaluation and from literature⁵⁸, and following the logic of the ToC produced for this evaluation.

<i>Level of the ToC</i>	<i>Possible unintended impact</i>	<i>Evidence</i>
From activities to outputs	Basic admission criteria in terms of education may limit quality and performance of CHWs	Some evidence from LSTM KIIs. Key Informants at District and Health Centre level complain about the low education level of some CHWs who have difficulties to acquire knowledge during the trainings. Evidence in literature that CHWs with more years of education are associated with higher performance (Alam et al, 2012; Crispin et al, 2012; Smith et al, 2012)
	PBF incentives may lead to increased performance regarding incentivised tasks	No evidence for Rwanda LSTM survey, FGDS and KIIs show that CHWs are confused about c-PBF mechanisms and do not necessarily know what activity is incentivised. This finding is also reflected in Condo et al ⁵⁹ study where “ <i>confusion of the CPBF system were widespread among FGDS</i> ” ⁷ . Some evidence from literature: Scott and Shanker (2010)
	Volunteer model with limited amount of hours per week spent on health activities may affect performance	No evidence for Rwanda Some evidence from literature: more time spent on the job per week associated with higher performance (Smith et al, 2013)
	Training linked to allowances and favouritism leading to demotivation	No evidence for Rwanda Evidence from literature (Kok and Muula, 2013; Olango et al, 2010)
	Lack of regular supervision may decrease motivation	Some evidence from LSTM Survey and FGDS Evidence from literature

⁵⁷ Negative program theory: http://betterevaluation.org/evaluation-options/negative_program_theory

⁵⁸ Kok et al. Which intervention design factors influence performance of community health workers in low and middle income countries? A systematic review. *Health Policy and Planning* 2015; 30: 1207-1227

⁵⁹ Condo et al. Rwanda’s evolving community health worker system: a qualitative assessment of client and provider perspectives. *Hum Resour Health* 2014, 12:71

From outputs to outcomes		(Callaghan-Koru et al., 2012, 2013; Gusdal et al., 2011; Kook and Muula, 2013; Moetlo et al, 2011)
	Difference care seeking behaviours amongst different socio-economic strata of the population (highly educated, wealthier households seek for formal care) may lead to inequity in the quality of services received	Some evidence from KIIs and FGDs
	Lack of means to diagnose, treat and/or refer patients may lead to decreased demand for CHWs services	Some evidence from KIIs and FGDs
	Inadequate implementation of diagnosis and treatment protocols may lead to patient harm (e.g. overtreatment with antibiotics may lead to antibiotic resistance)	Some evidence from KIIs, specifically on injections for contraception. Some KIIs at health centre level reported that while some CHWs are doing injections better than nurses, some CHWs do not do injections properly, <i>“they have difficulties to aspire the products and do not inject the totality of the product”</i> , as a result women got pregnant while they had received injections.
	c-PBF is a source of division between CHWs. While CHWs have for objective to gather CHWs, c-PBF creates frustrations between CHWs.	Some evidence from KIIs. While certain tasks can only be reported by binomes or ASMs through RapidSMS, it is not rare that both of them contribute to provide the health services. For instance, an ASM can identify a sick child during her home visit to a pregnant woman and accompanies the child to the binome for treatment. However, only the binome will get c-PBF for this activity.

Although the evaluators could not draw any definitive conclusion on the actual relevance of possible unintended impacts of the CHP within the Rwandan context, it is expected that the above presented issues are monitored closely in future, and that they possibly become subjects for further studies in future.

4.5. SUSTAINABILITY

EQ8 What are the main factors influencing the future sustainability of the program (human, social, financial, institutional)?

EQ9 To what extent and how are program results likely to be sustained in future (technically, institutionally and financially) and under which scenarios?

To address the question of long term sustainability of the program, the evaluation has assessed and proposes here below some considerations on long term effects that may prospectively impact on the relevance, as well as on the feasibility of the CHP. Our analysis is presented below along four key dimensions: financial; human; social; and institutional factors of influence.

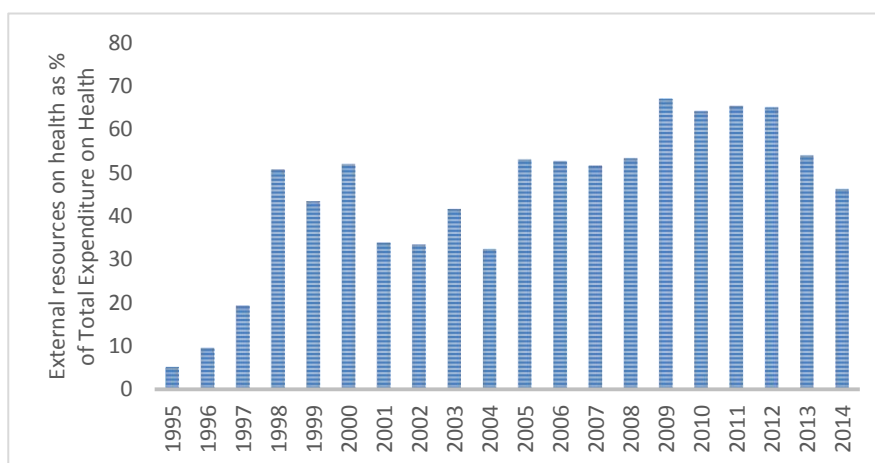
Financial sustainability

One central element of concern raised by multiple stakeholders during the course of the evaluation is the assessment of threats to the financial sustainability of the CHP, in the short and in the long term. Such concern is strictly related to a contingent situation, i.e. the progressive phasing over of funding from the Global Fund, that has supported the CHP at scale. Such situation echoes a more generalised trend of decrease in external funding for external assistance in Rwanda, at least for social services.

Figure 33. External resources for health as % of the total expenditure on health, 1995-2014

It is the opinion of the evaluators that such concern needs to be addressed, taking some key elements of analysis into account:

- External assistance is reducing, but such trend is progressive and not likely to exhaust support to the health sector completely in the short term (**Figure 34**);



- At the same time, the increase in GDP in Rwanda and the capacity of the Government to sustain health expenditure at approximately 10% of the overall government expenditure (source: WHO Global Expenditure Database, accessed in October 2016), are symptomatic of the prospective ability of the country to support the gains achieved so far via increased investment of internal resources for health.
- Concurrently, the out of pocket expenditure on health has also increased from 2 USD in 1995 to 15 USD in 2014, at current USD values (Source: WHO Global Expenditure Database, accessed in October 2016) supporting an argument of an increased ability (and propensity) of Rwandans citizens to spend resources for their health.

In such a scenario, and considering the fact that Rwanda has chosen a model of cooperatives of CHWs as the mechanism to sustain the CHP in the long term, we believe that no conclusive judgement can be made

regarding the short term support needed to reinforce such cooperatives, in the absence of a 'business case of the CHP', that presents the actual and prospective costs of the CHP and a clear and articulated funding strategy.

At the time of writing this report, preliminary unpublished data available on the cost of the CHP and on the profit generated via cooperatives ([Section 4.3](#)) suggest that at its current costs – estimated at 26 ML USD per annum – the CHP would absorb approximately 10% of the total Government Expenditure on Health in absence of alternative and complementary funding sources. Such investment is unlikely to be sustainable.

Cooperatives alone do not present actual or prospective capacity in the short and medium term to absorb any significant share of the costs of the CHP, unless they expand rapidly in number and in their capacity of generating larger income and profit. Clear commitment from donors in the short term to co-finance the program, and/or a quick redesign of the program (downscale) may be the avenues to be pursued to ensure program sustainability in the short and medium term.

Human factors and sustainability

The analysis performed so far points towards two important human factors that can potentially affect the long term sustainability of the program. These are shortly presented below.

- **Ageing population of CHWs**
Data presented earlier in this report show that approximately 25% of the actual population of active CHWs are older than 50 years. Prospectively, this may entail that the actual dropout rate (ca. 7% per annum) may progressively and significantly increase in the next few years, posing two key problems: the need to sustain a rapid investment for replacement of CHWs; and the potential difficulties of recruiting new volunteer CHWs from younger generations, who are potentially more educated and more geared towards remunerated job opportunities.
- **Increasing demand for respectful, quality care**
Focus groups implemented in communities have clearly highlighted that men and women accessing services from CHWs highly value the quality of care received, as well as the attitude and behaviour of CHWs in dealing with clients. Communities raise concerns about lack of education; hygiene; knowledge; and appropriate behaviour of some CHWs. This raises issues about not only the type and 'quantity' of services provided, but also about the quality of such services and the client satisfaction with those. Such aspects need close consideration, at the risk of deploying a cadre that is not used at its full potential by communities.

Social factors and sustainability

In the long term, two main social factors may lead to reconsider the scale and scope of the CHP.

- **Urbanisation**
Urbanisation is a physiological phenomenon globally, and particularly for growing economies. Rwanda makes no exception, and prospectively the population of the country will move towards urban settlements. Quoting the Rwanda Urbanisation Policy 2015: *'The urban population has increased from 4.6% in 1978 to 16.5% in 2012. The Vision 2020 prepares for reaching 35% in 2020. The average urban density surveyed in 2012 with 1,871 inhabitants per square kilometre has more than doubled since 2002. The current annual growth rate of the urban population is 4.1%. The capital city Kigali accommodated about half of the urban population in 2012 (NISR, 2014).'*

This issue cannot be ignored.

Available data clearly suggests that at the moment the CHWs are not used in urban areas as much as they are in rural areas, or at least not for all the services provided. Clearly, urban settlements present a more varied menu of options for accessing health services. Concurrently, they present a different burden of disease and different types of barriers to access, predominantly related to social/cultural issues and to opportunity costs. In such scenario, it is imperative for the policy maker to 'draw' the future of the CHP, taking into account that a different distribution of the population will be in place within the next decade, and that such distribution may change the patterns of demand for services, and prospectively the relevance of a cadre of community based providers.

- **Increasing prevalence of NCDs and medicalisation of health care**
Although malaria, HIV/AIDS, TB, ARIs and other infectious diseases still account for a large portion of morbidity and mortality in Rwanda, there is evidence that such situations are fast changing and that non communicable diseases will progressively absorb an increasing share of the demand for healthcare of Rwandans. The main underlying reasons for such a trend is the increasing life expectancy for the population, and the improved health status of the population due to the economic progress of the country.

Such issue poses two main questions, prospectively: 1) will there be demand in future for a cadre of volunteers equipped with basic training, or the changes in the epidemiological profile of the country will require more 'medical care'? 2) How much additional costs to the health sector will NCDs bring, and to what extent investments in tertiary care will affect the overall sector budget and hence the ability to continue investing in the CHP?

Answering these questions goes beyond the scope of this evaluative exercise; raising these questions will hopefully support the MoH in its future planning and reviews of the CHP.

Institutional sustainability

It is opinion of the evaluators that the CHP relies on an extremely solid design, and that such design is fully supported by political will and by institutional arrangements at all levels of the system. Interviews, focus groups, literature, and desk review of documents point towards a clear and consistent picture: over 20 years, the CHP has consolidated and is considered a priority at all levels.

At the moment we believe that the major threat to the institutional sustainability of the CHP is the current lack of an institutional framework regulating such a program, and determining in a formal manner the duties and the rights of a cadre of 45,000 providers of health care *vis a vis* the policy maker and *vis a vis* the fundamental right to health of the population.

In simple words, at this point in time there is a large cadre of individuals providing services to the population – some of those to treat life threatening conditions – without any formal arrangement in place. This situation poses all stakeholders at risk: the MoH, in that it does not have at the moment a formal counterpart to which certain services are 'subcontracted' at predetermined conditions; the CHWs, who are individually bearing the risk of providing care to individuals outside of any formal agreement that clarifies their rights and their duties; and ultimately citizens and users of CHWs, since at the moment there is no formal accountability mechanism protecting their rights to quality care when accessing community services.

5. CONCLUSIONS

During the course of the evaluation, the team commissioned to perform this independent evaluation has been exposed to an incredibly rich body of formal and non-formal evidence, including a vast amount of literature of the CHP in Rwanda; interviews; meetings; FGDs; review of data sets; review of reports; informal discussions; observation.

A lot has been analysed and a lot has been written so far on the CHP in Rwanda. Hopefully the added value of this evaluation is that we have looked at the CHP as an organic body. The focus has not been on any particular program nor on any particular function, but on the CHP as a comprehensive platform for community engagement and participation, and for access to basic health services.

The following section provides our main conclusions, i.e. the answers to the evaluation questions and hence the synthesis of the analysis produced so far.

Conclusions are presented here below by relevant OECD/DAC criteria.

Relevance

- The CHP is extremely relevant to national policies and plans, as well as to the priorities of the health sector. From the Rwandan Constitution to the CHP Strategic Plan, there is a logical continuum and a strong coherence in applying principles of participation, community engagement and human rights to the approach and design of the CHP.
- The CHP can rely on a comprehensive, exhaustive and well-articulated body of policies, protocols, manuals and tools, which are not only well designed but also consistently used and applied along the whole value chain of the CHP, from the central level down to facilities. The evaluation has identified a number of possible areas of simplification and of streamlining of the program design and regulatory documents, but these do not affect our positive judgement of the overall consistency and relevance of the program design.
- Communities consistently express appreciation for the CHP. They value it, especially in most hard to reach areas. Yet the voices of end user's express concerns for critical issues of quality of care, of age and poor education of (some) CHWs, and on the lack of trust for misbehaviours of some CHWs.

Effectiveness

- The program has been highly effective in creating a platform that complements the formal health sector in delivering a package of preventive and curative services at community level. At least for the largest programs delivered by CHWs (iCCM, MNH, FP, TB), services are provided at large scale across all districts of the country, and trends of service provision confirm that such scale is steady over time, and hence solid. Issues related to quality of care and to client satisfaction will be increasingly important in future to attract and retain demand of community health services.
- Despite the results achieved, the evaluation has highlighted areas of potential improvement of the program. In particular, we note that the current training model is inefficient and not supportive of an effective program, in that it does not provide timely access to training to all the CHWs recruited and deployed in Rwanda. A significant proportion of ASM and binomes are active in communities but have not been trained to deliver one or more interventions.

- We also note that the supervision model is well designed, and there is evidence to conclude that it is also well implemented. Regrettably, the low ratio of in-charges to CHWs, and the lack of means and resources, causes an inconsistent level of implementation of supportive supervision across the country.
- Finally, the evaluation has identified in the procurement and supply of medicines and equipment, a third critical area of attention and in need of improvement. The availability of functional equipment is unsatisfactory. And the inconsistent availability of medicines – high in facilities, low at CHWs level - suggests that there are issues related to the system of quantification and distribution of medicines at the lower level of the chain.

Efficiency

- At the time of writing this report, Information on the CHP program costs was accessed in draft. The survey and the interviews performed through the evaluation has provided some evidence that is suggestive of possible areas where efficiency gains can be achieved. One major area of potential assessment is the distribution and number of CHWs: evidence shows that the caseload of CHWs is relatively low, and so is their average workload. Hence, significant efficiencies might in principle be achieved via a model of deploying less CHWs who do more, although this may not function under the current model of pure volunteer work.
- Another important area where efficiencies can be gained is the redesign of the training model. The design and delivery of multiple training packages at different point in times to CHWs creates various levels of inefficiency, from the cost of production and reproduction of materials, to the costs of multiple delivery of trainings for both trainers and trainees, to the opportunity cost of having a cadre deployed and not immediately trained to deliver all the services that such cadre is supposed to deliver.
- The CHP relies on an extremely sophisticated, articulated and well-structured reporting system. Yet, the design and the routine management of a dual reporting system bears costs to the program that are possibly unnecessary. An evaluation of the Rapid SMS system has recently been finalized (University of Rwanda, November 2016) and provide evidence of the advantages of the system as well as of the operational challenges facing its implementation. This evidence will hopefully inform future discussions on the opportunity and feasibility of merging the two reporting systems into one.
- A significant quantity of medicines expires in communities. There are various determinants of this issue: CHWs may receive medicines for program/services which they do not actually provide; they may have to manage medicines with a very short shelf life (e.g. misoprostol); and at times they may receive health products with a short residual life. Potentially, this is an area where high costs are incurred.
- As soon as a final, detailed outlook of actual and standard costs of the CHP is be made available from the ongoing costing study, such cost estimates can be used to draw alternative models of operational design of the CHP, and to assess related efficiency and possible cost savings associated with short and medium term (re)design interventions.

Impact

- Quantifying or estimating the impact of the CHP on health outcomes was not a primary objective of this evaluation. Rather than quantifying an attributable impact, we focused on a theory-based approach aimed at understanding whether there is evidence that the CHP contributed to improved outcomes and how. Overall, this was done through an exercise of design and testing of a program ToC. We conclude that the program ToC is solid, and largely implemented as intended. There is a consistent 'story' drawn on multiple sources of evidence at various points in time that the program has been a contributor to improved MNCH in Rwanda.
- Additional pieces of evidence support such analysis. In particular, contributing to a wider body of evidence already available, this evaluation has assessed via a retrospective stepped wedge analysis whether there is any evidence that the introduction of c-MNH has improved institutional deliveries. The findings suggest that such intervention has significantly contributed to increase deliveries at health facility, and that it can be associated with reduced maternal mortality.

Sustainability

- The evaluation has identified some key variables that may possibly influence the sustainability and fitness for purpose of the CHP as it is today. These include: ageing population of CHWs and risks of high turnover in future; long term trends of urbanisation and of increasing burden of NCD, which may affect the patterns of demand for services and hence the relevance of the CHP; and the lack of a formal, institutional framework that allows a formal dialogue between a regulatory entity (MoH) and an institutional body representing the implementing agent (CHWs) around duties and rights of each party involved in the CHP.
- With regard to risks of short and long term financial sustainability of the program, the evaluation concludes that under the current scenario, the CHP will not be sustainable in the short and medium term unless commitment from domestic and external resources is made to support the CHP implementation. Combined to such commitment, an effort will be required to draw alternative models of community health services, that need to be explored as a means to achieve efficiencies to the program.
- Throughout the analysis, concerns are raised regarding the fitness for purpose of the current model of deployment of CHWs (fixed number per village, fixed package of interventions). Issues related to efficiency, to equity and to a changing social and economic scenario raise the question of whether the current model is prospectively the best suited to deliver community health.

6. RECOMMENDATIONS and LESSONS LEARNED

Short term recommendations

1. MoH and RBC should rapidly redesign the training model for the CHP, considering an integrated training approach as the way forward, in line with many other countries implementing CHPs; in doing so, aspects of health promotion and of respectful care should be included in the training package. Alternative forms of training (e-platforms) may be considered as options, especially for refresher trainings.
2. Evidence from the assessment of the Rapid SMS system in Rwanda should be used by the MoH as a starting point to engage stakeholders in a comprehensive discussion on the possibility of merging the reporting systems of CHWs into a single, unified and simplified one.
3. The CHU should move from a largely unused 'CHP logframe' to a lean, real time dashboard which makes use of routine data to manage the program against selected KPIs at all levels of the system.
4. With support from partners if relevant, the MoH should assess which are the systemic bottlenecks determining an inefficient and ineffective distribution of medicines *at the last mile*, i.e. from facilities to CHWs.
5. Given the short term funding constraints facing the CHP, the RBC and MoH should immediately produce a 'business case' for the CHP. This will be used to engage the Ministry of Finance and Economic Planning and key partners and donors in an informed dialogue aimed to explore short term financing options for the program.

Long term recommendations

Various long term issues have been raised in this report as prospective changes to the scenario of Rwanda, which may have effects on demand and supply of health services in the country and hence on the CHP.

Also, it is clear that given the high levels of coverage achieved from the country in the past decade, further progress will only be possible through surgical mapping/identification and 'smart targeting' of those pockets of the population that are currently unreached. And the CHP is by nature a perfectly suited instrument to sustain a flexible and effective smart targeting strategy.

In line with such thinking, our recommendations to the MoH and RBC for the long term include the following:

- Continue investing in cooperatives and to strengthen such mechanism. The focus on cooperatives should shift from that of creating a financial sustainability mechanism only, to a broader one of also creating an institutional framework under which CHWs can engage in an organic and formal dialogue with the MoH regarding service provision, duties, and rights.
- Design and implement a package of targeted interventions aimed at improving the recruitment, retention, performance and motivation of CHWs, having in mind a possible acceleration of the attrition, and a consequent 'generational change' in the pool of prospective candidates to be CHWs in future.

- Various models should be considered against a scenario of five to 10 years, to (re)design the program in such a way that it maintains its relevance to the needs of the Rwandan communities and to enhance its efficiency. These may include any of the following options:
 - Differentiate the package of services between rural and urban areas.
 - Reduce the package of curative interventions to those mostly used by communities, and epidemiologically relevant.
 - Consider strategies to reformulate the program so that it reaches the most unserved population more aggressively. This may include options such as retailoring the distribution according to parameters of population density, and/or of distance from facilities.

- A realistic, long term strategy must be conceived, to envision the role of CHWs in Rwanda within 10-15 years' time. In light of such vision, an exit strategy or a systemic and progressive change to the CHWs profile must be planned.

Lessons learned

The evaluation of the CHP has been implemented during the course of approximately one calendar year (January to December 2016). During this period, the process of designing, implementing and reporting the evaluation has given LSTM the opportunity to draw on a number of important lessons that are summarised below and that may be useful in future to the CHP in Rwanda.

1. *Research on CHWs in Rwanda*

A common issue that evaluators face in assessing health programs in low and middle income countries is the lack of sufficient evidence from literature on the object under evaluation. In the case of Rwanda, LSTM could access, classify and use a considerable amount of published and unpublished papers, whilst also utilising internal reports. This leads to two considerations:

- In future, it will be important to define a medium term research agenda for the CHP, and that the key studies performed in country by researchers address the questions defined by such agenda. This will lead to evidence-based decision making, as well as to the optimisation of resources allocated for research in Rwanda by domestic and international partners.

- The evaluators could not find any evidence of a systematic approach to the collection, management and use of literature for decision making. In future, it will be important that the monitoring and evaluation function of the CHP takes an active role in the systematic collection and dissemination of research on the program. A database should be set in place and made openly accessible to all stakeholders, to facilitate the use of existing evidence for policy or programmatic changes.

2. *Use of Routine data*

A second, common issue that evaluators commonly face is the lack of quality, consistent and representative routine data from the program under evaluation. In the case of the CHP in Rwanda, SISCOM, HMIS and Rapid SMS constitute a unique asset to the program and to the MoH more broadly, as these systems are implemented regularly, at scale, at a meaningful level of detail; data overall are consistent and of good quality.

One key learning of this evaluation is that such data is possibly an under-exploited asset, in that their analysis and use to the best of our understanding is limited to the compilation of routine reports and to the assessment of some coverage indicators.

It is opinion of the evaluators that the data sets generated routinely through the program provide an opportunity to perform more in depth analysis that can help the policy maker in informing strategic decisions regarding the program (e.g. difference in performance between rural and urban areas; difference in performance by cluster locations; trends analysis; etc.). To that effect, partners to the MoH should invest in the short term in providing dedicated, high quality technical assistance to the CHU that can enhance the capacity of the program team to generate complex analysis from the available data sets.

3. The evaluation function

To date, no comprehensive evaluation of the CHP had been performed in Rwanda, despite of the fact that the program has now been implemented for approximately 20 years, and that it has been implemented at full scale. A natural question arises at the end of this evaluation: when and how should the program be evaluated next?

Rather than providing a standard formula to address this question, the LSTM team suggests that in principle it would be good practice in future to link follow-up evaluations to major policy changes to the CHP, so to enable the country to measure the effects of any modification to the program through solid, scientific research methods. In such case, the following considerations will be important:

- Design the evaluation before the implementation of any program change, so to allow for the measurement of a baseline (pre intervention) and hence to assess changes against such baseline;
- Allow for sufficient time and resources to implement the evaluation. Various levels of formal approvals are required in Rwanda when performing scientific research, including: approvals from RNEC; approvals from NISR prior to implementing surveys; approval from NISR to disseminate findings of the survey. In addition, approvals from relevant Steering Committees or equivalent bodies are required at various stages of the work. Our experience is that, whilst the processes of formal authorisations and of internal validations are essential for quality and ownership of results, such processes require a considerable investment in time and in human resources. This investment should be factored in the planning of any future evaluation.

4. Commitment and participation

During the evaluation, LSTM has observed a unique spirit of commitment and a positive approach in participating to the evaluation at all levels of the system, from communities to high level officials. This is an asset that should not be underestimated, as the active engagement of stakeholders positively supports the quality, completeness and relevance of findings and recommendations.

7. LIST OF ANNEXES

Annex 1 – Terms of Reference of the Evaluation

Annex 2 – Inception report

Annex 3 - Approvals and authorisations obtained for data collection and analysis

Annex 4 – Design, assessment and review of a program ToC

Annex 5 – Report of the LSTM Survey of CHWs and Health Facilities

Annex 6 – Key findings of the evaluation qualitative research (2016)

Annex 7 – List of secondary data and reports

Annex 8 – Proposed publications