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National Community Health Worker Program Assessment

Sierra Leone

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TABLES

ACRONYMS

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
ARI	Acute respiratory infection
ART	Antiretroviral therapy
CHW	Community health worker
CUAMM	Doctors with Africa CUAMM
DFID	Department for International Development
DHIS2	District health information system 2
DHMT	District health management team
DOTS	Direct observed therapy short course
DPHC	Directorate of Primary Health Care
DQA	Data quality assessment
FGD	Focus group discussion
GOSL	Government of Sierra Leone
HF-6	Health Facility Report 6
iCCM	Integrated community case management
IP	Implementing partners
IPTp-SP	Intermittent preventive treatment in pregnancy with sulfadoxine-pyrimethamine
IRC	International Rescue Committee
IHPAU	Integrated Health Project Administration Unit
LTFU	Loss to follow-up
M&E	Monitoring and evaluation
MOHS	Ministry of Health and Sanitation
M-RQDA	Multi-Indicator Routine Data Quality Assessment
MUAC	Middle-upper arm circumference
NACP	National AIDS Control Program
NAS	National AIDS Secretariat
NETHIPS	Network of HIV Positives in Sierra Leone
NGO	Nongovernmental organization
NLTCP	National Leprosy and Tuberculosis Program

NMCP	National Malaria Control Program
ORS	Oral rehydration solution
PHU	Peripheral health unit
PIH	Partners in Health
PNC	Postnatal care
PS	Peer supervisor(s)
RDT	Rapid diagnostic tests
RMNCH	Reproductive, maternal, neonatal, and child health
SAM	Severe acute malnutrition
SOP	Standard operating procedure
SOW	Scope of work
TB	Tuberculosis
TBA	Traditional birth attendant
TOT	Training of trainers
USAID	U.S. Agency for International Development
WAR	Western Area Rural
WAU	Western Area Urban

EXECUTIVE SUMMARY

Sierra Leone's national community health worker (CHW) program received a boost in the post-Ebola period when it was identified as a priority in the presidential Ebola recovery plan and a CHW Hub was established in the Directorate of Primary Health Care (DPHC). Based on criteria and guidelines outlined in the CHW policy, CHWs, including peer supervisors (PS) to oversee their activities, were recruited into the program, and in-service training was conducted in 2017 and 2018. Approximately 14,000 CHWs are now trained and deployed to deliver integrated community case management (iCCM) and family planning/reproductive health, HIV, tuberculosis (TB), and malaria interventions (the last carried out by former traditional birth attendants [TBAs]) in communities across the country.

In the context of the implementation of this policy, this assessment sought to gather information on the functioning of Sierra Leone's CHW program, including implementation costs, the reporting structure and data collection and management processes, and the quality and quantity of services CHWs are delivering, as well as differences between the national CHWs providing general iCCM services and the CHWs and TBAs providing services related specifically to HIV, TB, and malaria. The assessment included three main components: a **process evaluation of the CHW reporting system**, a **CHW service quality process evaluation**, and a **cost efficiency analysis** of the CHW program, which aimed to answer the following questions:

- What is the overall quality of CHW reporting and what are the opportunities for and barriers to reporting quality data?
- What quantity and types of services (malaria treatment, etc.) are delivered by CHWs (as compared to health facilities)?
- What are the costs associated with services provided by CHWs in Sierra Leone?

Overall, six different types of data collection activities were conducted to compile the necessary data for synthesis and analysis: CHW survey of services and skills, survey of CHW beneficiary households, qualitative interviews with key program stakeholders, data quality assessment, abstraction of costing data, and abstraction and review of administrative data.

Findings

Program Design

- The general national CHW program is overseen by DPHC/CHW Hub, and the CHW programs of the different disease programs operate in silos within their own domains.
- The national program has a complicated setup with multiple donors and funding streams and implementers at the national level and across districts.
- While some donors fund activities at the district level, others support the overall management and supervision of the program, providing technical support at the national level.
- The different CHW cadres receive different benefits, including monthly incentives, transport expenses, and other equipment such as raingear and bicycles.

- Delays and challenges in payment of incentives result in CHW attrition and are an overall concern across all four CHW programs.

CHW Reporting System Process Evaluation

- Overall, there was minimal availability of source documents (raising questions about data quality).
- Reports at all levels were assessed for their availability, completeness, and timeliness. These measures improved as one moved up the system from the community to the national level.
- There was an overall lack of structure and guidance for CHWs and PS related specifically to data collection and reporting, and because of this and a lack of standardized processes, it is likely that the quality of data collected through the CHW health information system is poor.
- CHWs expressed difficulty documenting their activities, mostly due to the structure of registers.
- In addition to the structure of the registers, some CHWs discussed being overwhelmed by the sheer number of indicators they were required to capture, and some had a lack of understanding about what some of the indicators mean and how that information should be captured within the columns of the registers.
- Documentation was often linked to the availability of commodities. If CHWs did not have commodities available, some would not record interactions with their clients because they felt that if they were not giving a test or a medication, then they were not providing a service.
- CHWs and PS expressed a very strong desire for refresher training. Most indicated that they had received the initial training but felt that they were not fully equipped to collect and compile data accurately.

CHW Service Quality Process Evaluation

- Community mobilization, reproductive and maternal/neonatal/child health services, and management of sick children were among the most commonly provided services reported by national CHWs.
- TBAs reported accompanying pregnant women to facilities, followed by community sensitization on malaria prevention, maternal health, and environmental sanitation.
- The most commonly reported services provided by TB CHWs included TB/HIV education/sensitization identification and referral of presumed TB cases, follow-up of patients on directly observed therapy short course, and TB contact tracing.
- HIV CHWs reported HIV contact tracing, antiretroviral therapy defaulter tracing, and referral to health facilities as the main services they provided.
- Referrals to health facilities were a frequent outcome of the visits from national CHWs, TB CHWs, and TBAS.
- National CHWs were largely satisfied with the support they receive from their PS. Supervision took place on a regular basis for national CHWs, while supervision for the other cadres was much more informal and ad hoc.
- Stock-outs of drugs and commodities were identified as a major barrier to service provision for national CHWs and TBAs.

- The assessment of the quality of services provided by the CHW cadres indicated a high reliance on referral, even for uncomplicated illness, indicating that knowledge of how to treat uncomplicated illness may be low.

Cost Efficiency Analysis

- The annual costs associated with the CHW program showed a wide range by district (from 3.8 billion Leones [$399,000] in Western Area Rural to 8.4 billion Leones [$896,000] in Kenema) due to differences in number of CHWs, medicines distributed, and involvement of nongovernmental organizations (NGOs).
- The cost of national CHWs was affected by the number of CHWs in each district and number of child illnesses seen and treated, as well as screenings for malnutrition services.
- The cost was higher when NGO support was more intensive, and the cost per child illness treated was higher in districts where more services were provided.

Recommendations

Coordination of Fragmented CHW Programs

- Emphasize governance, accountability, and coordination, with the DPHC/CHW Hub taking on a stronger coordination role engaging the different disease programs.
- Disease programs should coordinate with regard to primary health care at the DHMT, chiefdom, and PHU levels.
- Integration should follow a phased approach. In the immediate future, roles of the national CHW and malaria TBAs need coordination with regard to support for pregnant women or malaria prevention in the communities they work in.
- Continue with integration of TB/HIV CHW programs.
- Conduct a time use study to get a clear understanding of the time CHWs take to perform their current role.

Funding and Sustainability

- The pooling of funds may not be feasible given different donor priorities. The role of DPHC/CHW Hub as the main coordinating body across all CHW programs is needed.
- DPHC/CHW Hub should hold regular discussions with all key actors as a group—MOH (national and district levels), donors, technical partners, IPs, etc.—to identify gaps and plan for current and future harmonized financial and technical support across districts.
- A district-based approach is needed to examine the use of funds and coordination at the district level.
- Explore alternate models to fund and support the malaria TBA program.
- There is advantage in the implementation of the CHW program through UNICEF or other technical partners despite higher cost.

Deployment of CHWs

- No immediate change is suggested to the number of CHWs deployed by the malaria, TB, and HIV programs beyond the proposed integration of TB and HIV CHW programs.
- In the context of limited funding, [re]define the roles and responsibilities of national CHWs and deploy different packages in different areas.
- Consider the scenarios presented in the report based on various assumptions in deciding on the final number and distribution of CHWs across the country. The final calculations and decisions for a new CHW deployment policy need to consider a number of factors and use existing data and tools such as the CHW Coverage and Capacity Tool (C3) recently developed by MCSP and available at https://www.mcsprogram.org/resource/community-health-worker-coverage-and-capacity-tool/.
- Although exact calculations on number of CHWs are needed, reducing the number of CHWs by 25% could reduce the cost of the CHW program by 21%, to 43 billion Leones or $4.6 million.

Remuneration and Payment Method

- Harmonize incentive packages across the CHW cadres to reflect their workload and roles.
- The use of mobile money is a best practice, but needs to be accompanied by a system that tracks and verifies CHW status, payments, current phone/banking—both in a database and by program staff.
- Explore other mechanisms such as the World Food Program system called SCOPE. However, given the country context, several of the current challenges may still be faced.
- Alternate payment systems suggested are the system used to pay government staff, or payments sent to the PHU through mobile transfer or other means and CHWs receiving payments through mobile transfer or other means when they are in the PHU for reporting purposes.

CHW Roles and Workload

- Emphasize the importance of community-based surveillance and health promotion.
- Clear guidelines on prescription of drugs, when to refer patients, and when they should be treated are needed and should be emphasized during training.
- Draft revised CHW policy with clear workload guidelines on how many days and hours CHWs are expected to work. Conducting a small time use study in select areas can inform this guidance.
- If supply chain system challenges are faced, consider CHWs role to cover identification and referral of illnesses.

Selection Process and Integration into the National Human Resource System

- New recruitment of CHWs based on the updated policy should focus on the gender balance and education of CHWs,to ensure that they are able to perform their role as expected.
- There is need for ongoing discussion and engagement with the Ministry of Human Resources to determine opportunities to offer some benefits, accreditation, or training based on the work they perform.

Integration into the National Health System

- CHWs should be well recognized as an extension of the health system. PHU staff should be sensitized regarding their valuable role in the community, with clear definition and discussion of the role of PHU staff and CHWs.
- Data compiled by CHWs on services rendered should be analyzed along with services rendered by the closest PHU.

Training

- Immediate need for refresher training and training for new recruits to the CHW program to ensure quality service provision.
- Training should cover all components of iCCM and all activities CHWs are expected to cover, including health promotion and data collection and reporting and practices to ensure data quality.
- PHU staff should be included in some of the training so they are aware of ways they can support CHWs when they perform their role.
- TBAs should be trained in the use of tools with pictures for easy reporting.

INTRODUCTION

Background

Sierra Leone has had a long history of using community health volunteers, such as community drug distributors for the mass distribution of drugs to protect against lymphatic filariasis and onchocerciasis. Prior to 2012, various Ministry of Health and Sanitation (MOHS) programs and nongovernmental organizations (NGOs) had their own community-level service providers. In 2012, Sierra Leone established its first national community health worker (CHW) program to harmonize and coordinate CHW initiatives. It aimed to standardize roles, training, supervision, and monitoring of CHWs. In 2015, while the Ebola outbreak was still active in much of the country, CHWs provided services to 391,341 sick children aged 2 to 59 months; conducted antenatal home visits to 83,550 pregnant women; visited 60,000 new mothers for postnatal care (PNC); and provided 63,243 newborns at least two visits within their first week of life. With the shortage of health care workers in Sierra Leone exacerbated by the severe outbreak of Ebola virus disease in 2014, there was also a need for specific CHWs to cover a broader range of other health activities, including malaria, HIV, and other health interventions.

The CHW program received a boost in the post-Ebola period when the Government of Sierra Leone (GOSL) launched its revised CHW national policy in 2016 along with an implementation strategy (GOSL 2016). The CHW program was identified as a priority on the presidential Ebola virus disease recovery plan and a CHW Hub was established within the Directorate of Primary Health Care (DPHC). The CHW program was institutionalized within the formal health system, and steps were taken to integrate community health data into the national health management information system. Based on criteria and guidelines outlined in the CHW policy, CHWs were recruited into the new program, and in-service training was conducted in 2017 and 2018. CHWs were given an expanded scope of work (SOW), the CHW training curriculum was revised, and the CHW supervision structure was introduced along with financial incentives for CHWs. A peer supervisor (PS) was assigned to groups of 10 CHWs, and CHWs were equipped to offer a comprehensive package of promotive, preventive, and curative services. Approximately 14,000 CHWs are now trained and deployed to deliver integrated community case management (iCCM) and family planning/reproductive health interventions in communities across the country. The National Leprosy and Tuberculosis Program (NLTCP) and the National Aids Control Program (NACP) have their own cadres of CHWs who provide relevant services supporting the country's tuberculosis (TB) and HIV programs respectively. The National Malaria Control Program (NMCP) has a cadre of traditional birth attendants (TBAs) who provide malaria-related services to pregnant women. It is possible that workers from these cadres overlap and also with other programs run by NGOs. For example, Catholic Relief Services implements its malaria behavior change program in the country through its network of community health volunteers,

Assessment Rationale

In the context of the recent implementation of Sierra Leone's newly revised national CHW policy, this assessment seeks to gather information on the functioning of the CHW program, including implementation costs, reporting structure, data collection and management processes, and quality and quantity of delivered services. The assessment also examines differences between the national CHWs providing general services, such as iCCM; community-based surveillance; reproductive maternal,

newborn, and child health services; and CHWs providing services related to HIV, TB, and malaria and the implementation of those programs.

Components of the Assessment

To gain a holistic understanding of Sierra Leone's CHW program, the assessment includes three main components: a process evaluation of the CHW reporting system, a CHW service quality process evaluation, and a cost-efficiency analysis of the CHW program.

The process evaluation of the CHW reporting system is designed to validate the consistency and timeliness of reporting at each level in the system (CHW, PS, Peripheral Health Unit (PHU) in-charge, and CHW focal person); determine the reliability of the data being reported through the system; and determine the barriers and enablers associated with reporting at each level in order to identify opportunities to improve the reporting process. The CHW service quality process evaluation works to assess the readiness of CHWs to provide quality services. As part of the service quality assessment, we will identify and validate critical performance metrics that can help drive the effectiveness of the program. Finally, the cost-efficiency analysis will collect program cost-per-input/output data from all district health management teams (DHMTs) and partners in the country that support CHWs and compare the inputs necessary for the CHW program against the number and perceived quality of services delivered to households by CHWs (outputs).

METHODS

Overview

The assessment adopted a mix of quantitative and qualitative methods, including an administrative review, focused on cost and quality of the implementation of the CHW program to answer the key research questions. The data collection approach, analysis, and dissemination-related activities for this assessment was informed by the principle of participation. To this end, the data collection team worked closely with the MOHS at the national, district, and community levels to ensure that the context around the implementation of the CHW program was well understood, and data collection procedures were appropriate for this population.

Research Questions

CHW Reporting Process Evaluation

- What is the overall quality of CHW reporting and what are the opportunities for and barriers to reporting quality data?
    - How complete and timely is the reporting of community data at each level (CHW, PS, PHU, DHMT)?
    - What are the levels of reliability (completeness and consistency as a proxy for accuracy) of tracer indicators (malaria rapid diagnostic tests [RDTs] and artemisinin-based combination therapy [ACT], household visits, commodity availability, etc.) at each level?
    - What are the barriers and opportunities for improving the completeness and accuracy of reporting of community data at each level (CHW, PS, PHU, DHMT)?

- What gaps exist in the reporting process?

CHW Service Quality Process Evaluation

- What quantity and types of services (malaria treatment, etc.) are delivered by CHWs (as compared to health facilities)?
  - What is the level of CHW services by service type (e.g., average number of household visits per month, average number of cases of fever in children seen per month, etc.)?
  - What are the beneficiaries' perceptions of the services provided by CHWs?
  - What is the overall quality of CHW services provided to beneficiaries?
  - What are the levels of CHW readiness and skills to provide high-quality care?
  - What materials, equipment, supplies, and health system supports (training, supervision, motivation, etc.) are available to CHWs to provide high-quality services?
  - What is the perceived quality of care and satisfaction with services provided by CHWs?

Cost-Efficiency Analysis

- What are the costs associated with services provided by CHWs in Sierra Leone?
  - What is the total cost of the national CHW program?
  - What are the costs associated with providing each type of service—or the costs associated with providing services by each cadre of CHW?

Overall Evaluation Recommendations

- What are the critical performance metrics that should be measured for the CHW program?
- What are the limitations in the design and implementation of the national CHW program and what are opportunities for improvements for modifications to the design and implementation of the program?
- What are the potential future research opportunities to expand the understanding of the implementation or cost-effectiveness of the CHW program?

Data Collection Sample and Tools

To ensure that the evaluation team was able to capture all of the necessary information to conduct the three proposed assessments, six different types of data collection activities were conducted and are described in Table 1, which includes specific information on the sample and illustrative sources of data for each of the six data collection efforts. Additional details including specific information on the sample, data collection activities, ethical considerations, including data confidentiality and risks involved, are presented in Appendix A. All data collection instruments are available in the companion document to this assessment report.

Table 1: Overview of Data Collection Activities

Cost-Efficiency Analysis	CHW Reporting Process Evaluation	CHW Service Quality Process Evaluation	Data Collection Methods	Sample/Population	Illustrative Sources of Data
			A. CHW survey of services and skills	• 594 CHWs across 6 districts (Bo, Koinadugu, Kono, Moyamba, Tonkolili, WAU) *(distribution based on the number of (iCCM, TB/HIV, and TBAs)*; subset of CHW sample for material audit (59 CHWs)	• CHW interviews • Case scenarios • Register review • Material audit
			B. CHW Beneficiary Household Survey	• 173 female caregivers of at least one child under 5, pregnant women, other adults that recently received services from CHWs • 2 districts – Bo and Koinadugu	• Household interviews
			C. Qualitative interviews with key CHW program stakeholders	• 12 CHWs (*mix of iCCM, TB/HIV, and TBAs)* • 6 PS • 6 facility in-charges • 6 CHW focal persons (at DHMT) • 2 CHW – beneficiary focus group discussions • All data collection listed above in 6 districts (Bo, Koinadugu, Kono, Moyamba, Tonkolili, WAU) • National-level programs (DPHC, CHW Hub, NLTCP, NACP, NMCP) • Donors and implementing partners	• Key informant interviews
			D. Data quality assessment	• 60 CHWs • 12 PS • 12 PHUs • 6 CHW focal persons (at DHMT) • All data collection listed above in six districts *(sample distributed evenly across six districts)* and from national-level representatives	• Patient registers • MNCH and medicine registers • PS data compilation form • Form HF6 or F6
			E. Abstraction of costing data	• National CHW program • 14 DHMTs • Implementing partners • Takes into account the different CHW groups (iCCM, TB/HIV, and TBAs)	• DHMT-level CHW program financial reports • National-level CHW program financial reports • Implementer/ partner CHW program financial reports
			F. Abstraction and review of administrative data	• National CHW program office • 14 DHMTs and the subdistrict level	• HMIS/DHIS2, District-level data

Data Analysis

All survey data (CHW and beneficiary household survey) were analyzed using Stata 14 and included descriptive statistics on key indicators/outcomes relevant to the CHW program. Relevant questions from each of the surveys were mapped out to the evaluation questions to determine the appropriate analysis. The analysis was primarily descriptive, showing the current status of relevant indicators. All analysis was conducted at the national level and to the extent possible information for each of the HIV, TB, and malaria TBA groups are highlighted.

Quantitative data collected through the data quality assessment (DQA) were compiled and used to calculate overall availability, timeliness, and completeness of reporting at each level (CHW, PS, PHU, and DHMT). Information gleaned from the system assessment (or qualitative) portion of the DQA was analyzed for key themes and summarized.

English transcriptions from key informant interviews were reviewed by the evaluation team for thematic analysis based on the research questions. These data were interpreted alongside the survey data collected and summarized together in the same report. Information gleaned through these interviews with key respondents helped to map the reporting process as well as the perceived value of the data being collected, the use of CHW data, the associated barriers and enablers with reporting at each level, and gaps and opportunities for improvement within the CHW reporting system and program in general.

Key indicators from administrative data were abstracted from the district health information system 2 (DHIS2) in order to conduct the cost-efficiency analysis. The costs of the CHW programs in Sierra Leone were analyzed for the period July 2018–June 2019 across the four cadres of CHWs. Calculated outcomes of interest include program cost by district disaggregated by activity (service delivery, training, and management). Additionally, the analysis included the total cost of the program and cost per indicator of interest by cadre. For activities that occurred one time only as a start-up activity, such as training, costs were annualized over three years. Equipment was also annualized based on information on replacement frequency.

LIMITATIONS

- The availability of CHW registers and reports was limited. The lack of source documents prevented the team from adequately conducting data verifications for selected indicators collected and reported by CHWs. These issues indicated an overall lack of proper archiving procedures.
- Reaching the intended sample was a challenge, especially for the beneficiary survey. Moreover, it is possible that beneficiaries who responded to the surveys may not have felt comfortable being open/transparent about services received due to the CHW's status in the community.
- Because of time constraints, a household survey was not possible to capture all beneficiaries. Beneficiaries were identified through information in the CHW registers from CHWs who were surveyed. Therefore, the beneficiary survey only reached clients who had received services in the last month, resulting in a sample that may have been slightly biased. While the team did try to capture the perspective of the community in the focus group discussions conducted, there may be a bias in the findings of this component of the assessment, and the frequencies should be reviewed with caution.

- The scope of the assessment was limited to six districts because of the short timeline of the assessment. Although some findings can be generalized to the entire country, this is not always possible as the funding and implementation of the CHW program vary in each district.
- Small numbers of "other" cadres of CHWs (TB, HIV, and malaria TBAs) are represented in the assessment. As a result, findings are most robust for the national CHWs that focus on iCCM services. The beneficiary survey also did not cover HIV clients to get their perspective because of the sensitivity involved. Additionally, the CHW survey did not review case scenarios for "other" cadres, as standardized and validated case scenarios were not available. As a result, discussion of quality of care provided by TBAs, TB CHWs, and HIV CHWs is not feasible.
- Accurate compilation of data on costing of the CHW program was especially challenging given the complicated structure of the program and the multiple donors and implementers involved. Moreover, there were challenges in compiling the management cost because of the sensitivity of sharing actual salary information. Assumptions of the costing assessment are included in a later section of this report.
- The assessment relies on administrative data from the DHIS2, especially the HF-6, to conduct the cost-efficiency analysis. The quality of reporting therefore has implications for the cost-efficiency analysis. Since the new HF-6 was being completed in all districts only beginning in March 2019, data on several indicators, such as household visits, postnatal visits, etc., are incomplete for prior periods.

FINDINGS

Program Design

Global Fund grants currently support the majority of the CHW programs in Sierra Leone. These funds cover the national CHW program overseen by the DPHC and the CHW Hub; the HIV CHW program overseen by the NACP and NAS, with technical support from Partners in Health (PIH); the TB CHW program overseen by NLTCP; and the malaria TBA program overseen by NMCP. Funds from other donors such as the World Bank, Gavi, Irish Aid, etc., also support different activities within the program.

The CHWs work in the areas of family planning, maternal health, newborn care, child health, nutrition, HIV and TB, malaria, and water and sanitation. Their activities cover iCCM activities, disease prevention and control through provision of education and/or counseling, community sensitization to HIV and TB, administering tests, providing medication, and other services including referrals and follow-ups. Two-hundred and eighty HIV CHWs are attached to antiretroviral therapy (ART) sites in the district hospitals in seven high-burden districts (Bo, Bombali, Kenema, Port Loko, Tonkolili, Western Area Urban [WAU] and Western Area Rural [WAR]), with 40 CHWs at each ART site. There are 1,209 TB CHWs located in directly observed therapy short course (DOTS) sites in the 14 districts in the country. There are also 1,814 TBAs who provide malaria-related services to pregnant women, new mothers, and infants. Table 2 presents the distribution of the different CHWs and PS in the districts in Sierra Leone.

Table 2: Distribution of CHWs and Peer Supervisors by District

	National CHW Program	TB Program	HIV Program	Malaria Program	

Districts	# CHWs	# PS	# TB CHWs	# HIV CHWs	# Malaria TBAs	Total CHWs
Bo	989	110	101	40	151	**1.391**
Bombali	1,008	112	136	40	130	**1.426**
Bonthe	872	85	31	-	90	**1.078**
Kailahun	1,000	90	79	-	113	**1.112**
Kambia	830	100	92	-	154	**1.346**
Kenema	1,209	109	75	40	224	**1.657**
Koinadugu	1,099	109	88	-	96	**1.392**
Kono	928	97	110	-	165	**1.300**
Moyamba	927	93	81	-	140	**1.241**
Port Loko	1,194	120	91	40	200	**1.645**
Pujehun	925	93	61	-	150	**1.229**
Tonkolili	1,218	123	81	40	125	**1.587**
Western Area Rural	495	55	56	40	61	**707**
Western Area Urban	494	54	127	40	15	**730**
Total	**13,188**	**1350**	**1209**	**280**	**1814**	**17,841**

Source: CHW Hub, UNICEF Sierra Leone
Note: There may be variation in these numbers because of attrition and the ongoing verification process.

The next sections present an overview of the national CHW program as well as the TB CHW, HIV CHW, and malaria TBA programs. While the programs and key issues are described here, additional details are presented in later sections of the report that highlight the CHW reporting process and service quality.

National CHW Program

The CHW program was established when maternal child health aides who were initially intended to provide services at the community level became attached to PHUs during a severe health worker shortage (Barr et al. 2019). While they became part of the official health workforce, CHWs who were later recruited to work at the community level were excluded from the formal payroll system. Although there has been some effort to integrate the role of CHWs into the health system by ensuring that the services they provide are incorporated into the DHIS2, there has been little integration with Sierra Leone's human resources for health system (One Million Community Health Workers Campaign n.d.).

The goal of the national CHW program in Sierra Leone as it currently stands, as per the conceptual framework outlined in the CHW policy, is to contribute to improving reproductive, maternal, newborn, and child health outcomes and reduce morbidity and mortality from preventable and

treatable diseases in the country. The expected impacts of the program are to reduce maternal, newborn, and child mortality and reduce burdens of malaria and acute malnutrition.

The main mechanisms to achieving this goal are through the achievement of the following outcomes, which define the role of the CHWs in the program.

- Improved community knowledge, attitudes, and practices on healthy behaviors, including early care seeking
- Improved, equitable access to quality maternal, newborn, and child care through referral and in-community care
- Improved early detection and initiation of response for notifiable events

The primary responsibilities of CHWs are to meet community health needs in their designated catchment area, attend monthly meetings at the PHU, report to the PS, submit reports on time to the PS or PHU in-charge (monthly and more frequently for notifiable diseases), fulfill the SOW outlined in the national CHW policy and provide it to their designated catchment area, provide high-quality services in a respectful manner, and participate in local community structures (facility management committee, village development committee, etc.).

The PS are responsible for supervising all CHWs in their catchment area at least twice per month, mentoring CHWs, and acting as the liaison between the CHW and the PHU. Overall, CHWs are expected to work two to three days a week to perform their role effectively, though some report working for longer periods in a week. More specific details of the responsibilities of CHWs and PS are outlined in the national CHW policy drafted in 2016.

The CHWs were recruited in 2016 and 2017 based on the guidelines in the new CHW policy. A geo=mapping exercise was conducted to identify communities and the number of CHWs within each, based on the caseload. The local communities played a large role in identifying CHWs for the program. Based on the new policy guidelines, CHWs are paid 100,000 Leones/month and PS are paid 150,000 Leones/month. Additional funds are paid monthly to cover transport and logistic support—50,000 Leones for CHWs in easy-to-reach areas; 80,000 Leones for CHWs in hard-to-reach areas; and 100,000 Leones for PS. Easy-to-reach and hard-to-reach areas are defined based on the distance of the CHWs' assigned community from the PHU. Easy-to-reach areas are defined as those less than 3 km from a PHU. All payments of incentives are made by mobile transfer through Orange.

There has been some attrition of CHWs, and verifying actual numbers is a constant challenge.

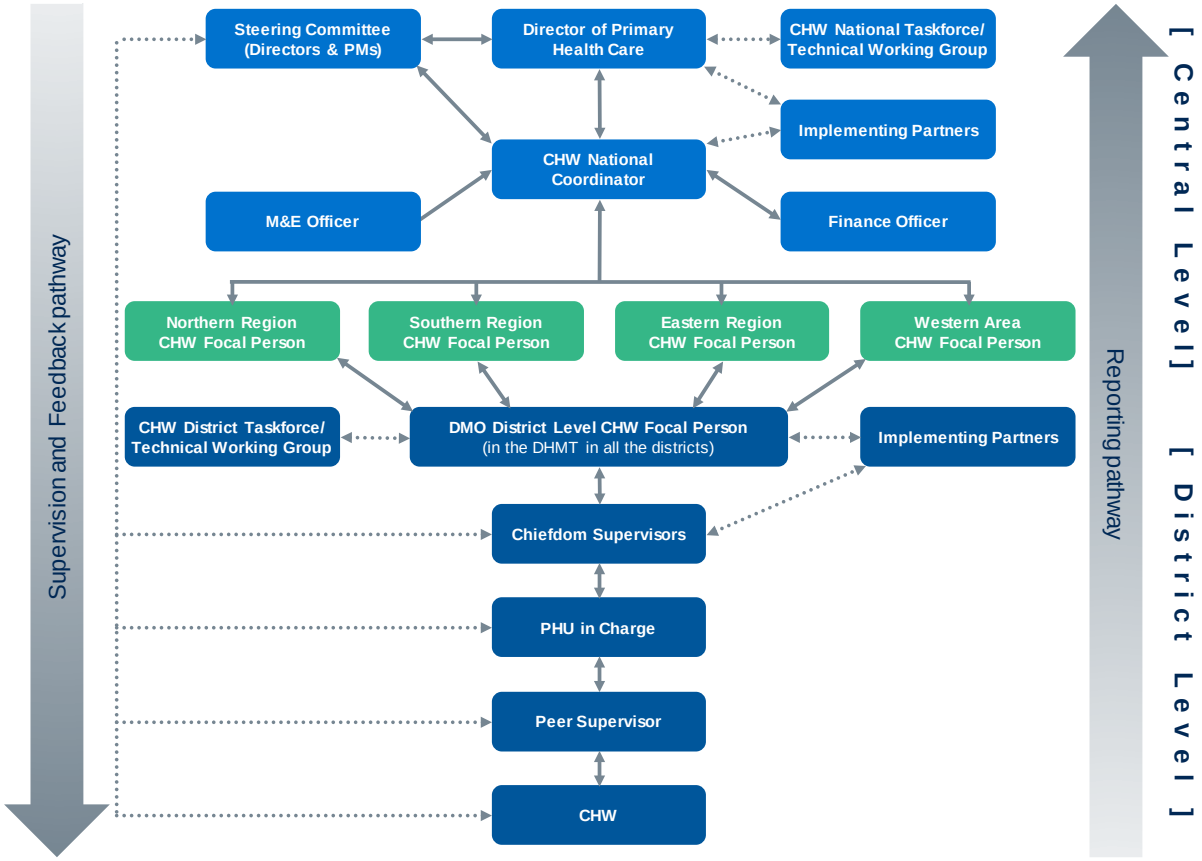
> ***"Attrition may be 5 to 7% in some places, especially in urban areas. Western Area Urban in particular faces a lot of problems. Attrition may be lower in remote areas."***
>
> **– National Stakeholder**

CHWs were trained in two stages over the course of one year from March 2017 to March 2018. First, a national level training of trainers was held with master trainers. This training was provided with financial and technical support from UNICEF and USAID and also involved several organizations such as JSI, Save the Children, and Goal. The master trainers trained district trainers. The second level of training was conducted by district trainers to all CHWs in each district. Training included four modules, three for CHWs, and an additional module for PS. Training included a classroom session of

7 to 11 days followed by practical experience in the community over two weeks. In one district, Pujehun, CHWs were receiving their last module of training in September 2019. While there is some attrition and new recruitment of CHWs on a regular basis, no additional preservice training is provided, and instead a system of on-the-job training and mentoring is followed. A refresher training is planned for 2020 under the next Global Fund grant.

The CHW program follows the governance structure specified in the national policy (Figure 1) (MOHS, 2016). Additional oversight and technical support are provided by UNICEF.

Figure 1: National CHW Program Governance Structure



Source: Sierra Leone National CHW Policy 2016.

The national CHW program receives financial support primarily from the Global Fund, with additional funds from various donors that support activities in different districts. These activities are all managed through the CHW Hub under DPHC in the MOHS of the Government of Sierra Leone, although implementation patterns vary by district. The Integrated Health Project Administration Unit (IHPAU) acts as the arm of the MOHS though which funds from the Global Fund and World Bank are routed. The funds are further routed through implementing partners (IPs) in eight districts, while DHMT implements the program in seven districts. UNICEF has played a large role in overseeing the implementation of the CHW program. Some of the activities of UNICEF include provision of programmatic support to the CHW program, building technical capacity of CHWs, supportive supervision, conducting performance reviews, supporting monitoring and evaluation (M&E), building capacity of the CHW Hub, supporting training and the community-based information system, and engagement in policy dialogs. UNICEF's role in the earlier stages of the program was restricted to U.K. Department for International Development (DFID)–supported districts—Kambia, Kono,

Bombali, and Bonthe—where partners were engaged in implementation. More recently, their role has expanded to cover a larger number of districts where they also oversee the payment of incentives to CHWs and PS. In some districts with Global Fund support, UNICEF facilitates incentive payment and does not conduct supportive supervision. In other districts, such as Kambia, they support the entire program, The scope of each donor's support also varies by district and type of activity. Table 3 provides an overview of the different donors and IPs of the national CHW program in Sierra Leone's 14 districts.

Table 3: Source of Funding and Program Implementation of the National CHW Program

Province	Districts	Funder	Routed through	Implementer / IP
Southern	Bo	Global Fund	UNICEF	DHMT
Northern	Bombali	Gavi	UNICEF	DHMT
Southern	Bonthe	DFID (earlier)	None since Oct 2018	DHMT (earlier CUAMM)
Eastern	Kailahun	World Bank	IHPAU	DHMT
North West	Kambia	IrishAid	UNICEF	DHMT
Eastern	Kenema	Global Fund	UNICEF	GOAL
Northern	Koinadugu	World Bank	IHPAU	DHMT
Eastern	Kono	GAVI, Korean NatCom	UNICEF	IRC
Southern	Moyamba	Global Fund	UNICEF	GOAL
North West	Port Loko	Global Fund	UNICEF	Concern Worldwide
Southern	Pujehun	Global Fund	UNICEF	CUAMM
Northern	Tonkolili	Global Fund	UNICEF	Concern Worldwide
Western	Western Rural	Global Fund	UNICEF	Concern Worldwide
Western	Western Urban	Global Fund	UNICEF	DHMT

Note: Funds to several districts with programs currently being implemented by GOAL, CUAMM, Concern Worldwide for example were previously routed through IHPAU, but now through UNICEF since early 2019. The memorandum of understanding for implementation by these partners runs through September 2019.

The IPs, Doctors in Africa CUAMM (CUAMM), Concern Worldwide, and GOAL provide minimal support within each district, including disbursement of incentives and organizing coordination meetings. The International Rescue Committee (IRC), on the other hand, has long-standing experience implementing programs in Kono and has taken on a larger role, providing technical support and oversight to the program at the district level with support and oversight by UNICEF and additional financial support from other sources. Funds for incentive payments from Gavi and supervision and technical support from Korean NatCom are routed to the district through UNICEF and IRC.

The role of the donors in supporting the national CHW program is complex. Donors support various activities at the national level and in many instances also provide support across districts. Details of the roles of the different organizations that support the CHW program are presented in Table 4.

Table 4: Support Provided by Different Donors to the National CHW Program

Donor	Activities
Global Fund	Incentives and logistics, quarterly and monthly supportive supervision, printing of CHW registers and referral tickets, CHW annual review
World Bank	Incentive and operational costs, technical assistance for CHW data management, salaries for two Hub staff
DFID/UNICEF*	Incentive payment, quarterly supervision, printing of CHW registers and supplies, etc.
Gavi/UNICEF	Incentives
Irish Aid/UNICEF	Incentives, supportive supervision, monitoring, orientation, reviews, etc.

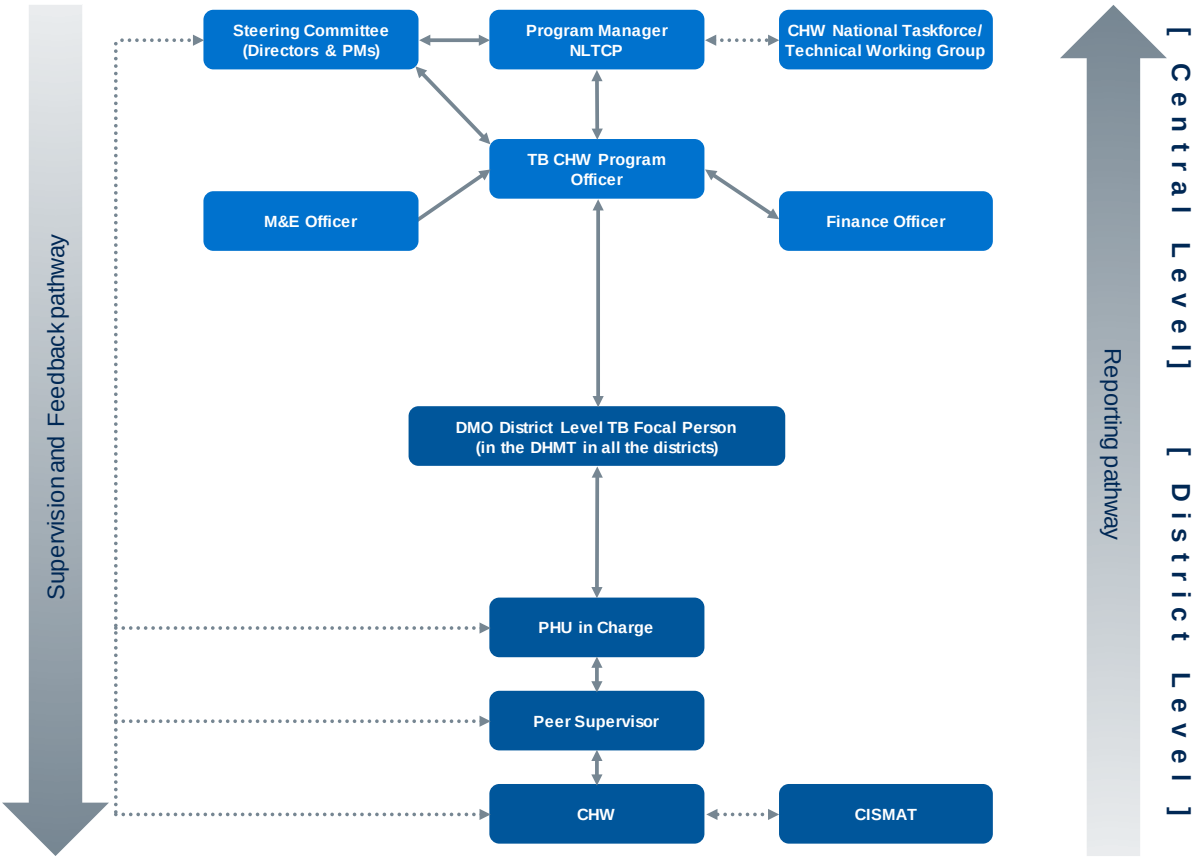
Note: DFID no longer supports incentive payments since September 2018. Previously, they covered incentive payments in four districts—Bombali, Kono, Kambia and Bonthe.

UNICEF plays a key role supporting the national CHW program to build its technical capacity, provide supportive supervision, conduct performance reviews, support M&E training, and develop a community-based information system. UNICEF also handles the printing of job aids, referral tickets, and registers and providing and replacing equipment, such as acute respiratory infection (ARI) timers, when needed. Other equipment, such as raingear and T-shirts, were provided during the beginning of the program in 2017. Currently, there is no plan for regular replenishment of these items.

Tuberculosis CHW Program

The TB CHW program is overseen by the NLTCP. TB CHWs have been allocated to PHUs that offer TB services to patients using DOTS and complement the efforts of the program's DOTS activities. A total of 1,209 TB CHWs have been verified and assigned to 170 DOTS facilities in the country. The main role of the CHW is to support the reduction of dropout and loss to follow-up. The structure of the TB CHW program as it currently exists is presented below.

Figure 2: TB CHW Program



A total of 1,425 TB CHWs were trained by June 2018 and the verification process completed in two months. However, some issues related to verification of names and TB CHW placement continue. The program proposes to increase this number to 1,500. The initial training was for five days each per set (class of between 30 and 55 participants). No refresher training is planned for now as the trainings were completed just last year.

TB CHWs are paid an incentive of 150,000 Leones through mobile payments using the company Orange on a quarterly basis. This incentive has been paid through 2018. A general concern is the low literacy levels of the CHWs. Another is the attrition of the TB CHWs recruited because of no or late payment of the incentive.

As part of the verification process to ensure payment, CHWs complete an attendance form. The PHU staff/DOTS provider registers when they visit or implement activities, once/twice a week. Generally, the CHWs visit the facility four times a month.

The CHWs were provided with backpacks, rain boots, and raincoats. Seven districts were provided with bicycles to facilitate the mobility of CHWs, though many bicycles are still in the district stores and have yet to be distributed. CHWs also have a job aid and forms, including the treatment calendar, referral ticket, contact tracing form, loss to follow-up tracing form, monthly summary forms, and a training manual. At this point, the main form being used by the TBAs is the contact tracing form. Three of these forms are facility based and kept by the facility in-charges/ DOT providers (contact tracing form, loss to follow-up tracing form and monthly summary form).

Although a TB CHW policy was not available, a TB/HIV CHW policy has been recently drafted that combines and streamlines the efforts of the TB and HIV CHWs (Government of Sierra Leone, 2019).

This will ensure that all TB cases are screened for HIV and HIV cases screened for TB. At the first stage, the program will be rolled out in the seven high-burden HIV districts where HIV CHWs are already working. Discussions on details of implementation of this program are in process.

The role of the TB CHW covers the following activities:

- Provide education and information on TB and HIV through community sensitization activities to leaders, community members, etc., to increase level of awareness about TB/HIV and available services for both prevention and care
- Identify people in communities who are presumed to be TB cases and refer them for diagnosis and management
- Follow-up on patients who are on treatment to continue the treatment even at home by ensuring that patient take their treatment by direct observation by CHW as advised by the health personnel (Community DOTS)
- Follow-up with patients in their respective homes through home visits and ensure patient education on side effects, TB and HIV issues, adherence counseling, and prevention
- Identify a treatment buddy with the patient within the family, household, or close friends who will assist them to accompany patients to heath facility
- Trace patients who have interrupted treatment, counsel them, and refer them to the DOT Center to resume treatment and care (if they miss two or three treatment visits)
- Conduct contact tracing for index cases assigned to them by DOT facility staff
- Work closely with the facility in-charges in the assignment of patients to CHWs (PS)
- Link communities to DOT facilities
- Attend monthly CHW meetings with facility in-charges
- Collect and record data using the reporting and monitoring tools

PHU in-charges and DOT providers are the immediate supervisors of the CHWs and the PS. They reassess the referrals conducted by CHWs and send them for testing for confirmation. They assign patients to CHWs for follow-up treatment, contact tracing and tracing of persons who interrupt treatment and provide them with guidance and support to complete the appropriate forms. Together with the CHWs or the PS, the in-charge completes the monthly summary forms. They also provide technical support to both the CHWs and the PS.

CHWs are required to bring the information they compile to the DOTS site, where the information is aggregated and sent to districts through supervisors (in-charge). Training on DHIS2 has been provided. The data are entered into DHIS2 (from the 12th to 15th of the month). Some districts compile this information, but the data are not consistently available across all districts. The hard copy of the data is sent to the national TB program.

Supervision of CHWs takes place on a regular basis. The national program conducts monitoring and supportive CHW supervision on a quarterly basis in collaboration with district supervisors. A monthly meeting is held at the district level, which one CHW from each DOTS facility attends.

The main challenges identified by the national TB program with regard to implementation include:

- Delays in verification

- Delays in receiving bicycles
- A general feeling that the impact of the program is low
- Challenges in payment of the stipend/incentive
- No additional support from IPs is available beyond Global Fund program funding

HIV CHW Program

The HIV CHW program is coordinated through the NACP. Forty CHWs have been appointed in each of the seven high-burden districts in the country, namely Bo, Kenema, Makeni, Tonkolili, Port Loko, WAU, and WAR, and a total of 280 HIV CHWs are in ART sites, typically the district government hospital. The program receives technical support from PIH. Approximately 20 to 30 clients are expected to be assigned per CHW. The CHWs were recruited with support from the community leaders. However, the CHWs face literacy and other challenges, requiring a reassessment of the qualifications of HIV CHWs.

HIV CHWs were trained in 2018 followed by verification of all CHWs and the development of an updated database of all the CHWs, which is available at the NACP. Refresher training was scheduled for July 2019. The HIV CHWs are paid a stipend of 250,000 Leones. However, there has been a delay in payment. Although they have been paid in the last few months, there is a backlog. The main activities of the CHWs are defaulter tracing and home visits. The defaulter tracing is done in coordination with NETHIPS, the Network of HIV Positives in Sierra Leone. Their activities should also include adherence counseling and linkage to care; however, the forms they are required to complete are limited to defaulter tracing only. Although they are already identifying TB patients, this may change with the TB/HIV integrated activities. CHWs are supposed to visit the health facility three times a week.

The program includes PS who only work at the ART site and monitor CHWs and assist the facility in-charge. One PS is assigned per ART site and is paid the same amount as the CHW. Some districts, such as WAU and WAR, have larger numbers of PS. He/she is required to come to the ART site every day. The PS' role is to identify new clients and defaulters and distribute this list to CHWs to trace defaulters. In addition to the PS, there are two CHW supervisors per district who are paid 350,000 Leones.

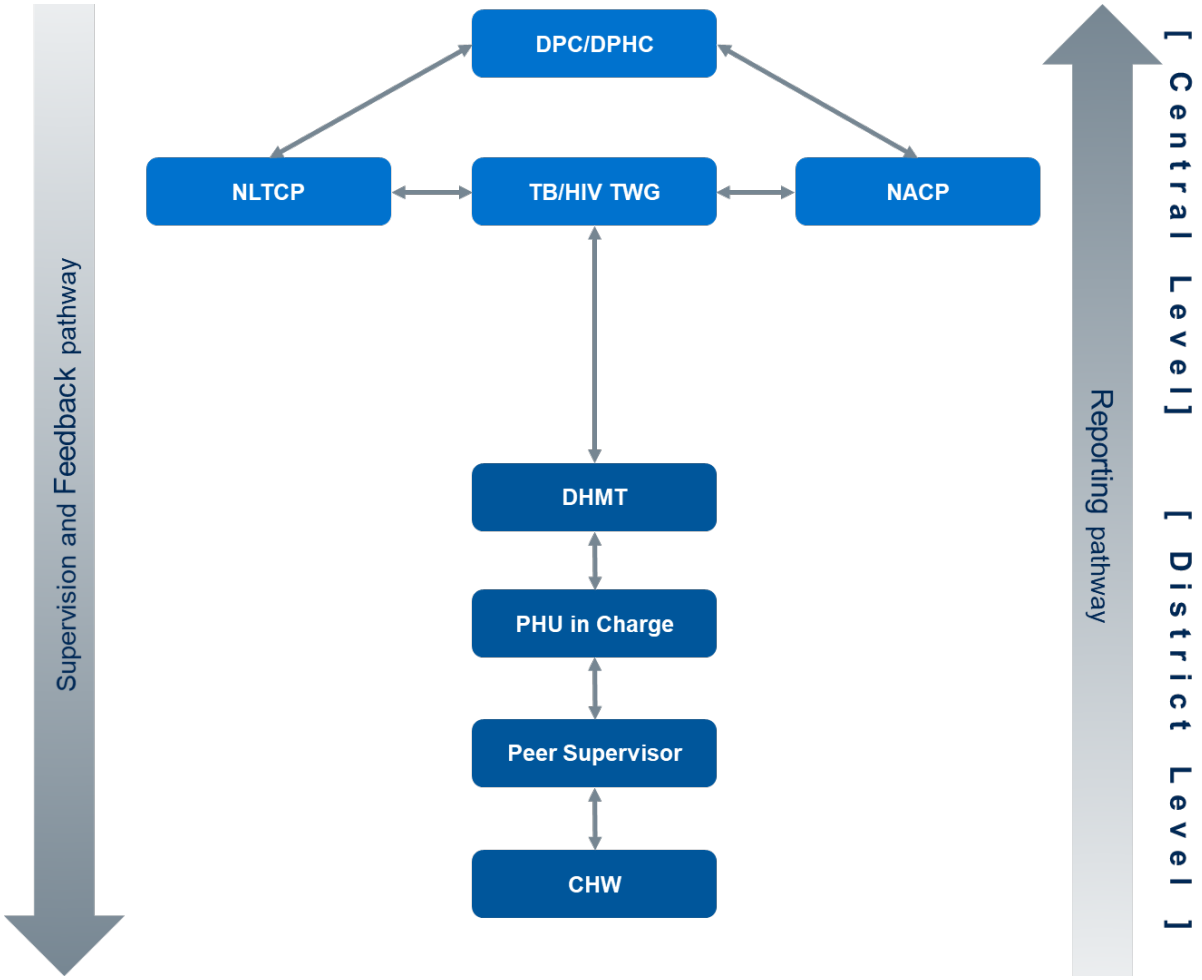
Supervision takes place at multiple levels, the district CHW focal person, and at the higher levels, NACP staff and NETHIPS regional coordinators. Despite the role of NETHIPS and PIH in supporting NACP in managing the HIV CHW program, there is a sense that there is insufficient coordination between the three organizations and their roles could be streamlined. For example, the HIV program provides incentives to the HIV CHWs, but NETHIPS is still involved if there is an issue.

The program still uses copies of the old defaulter tracing tool, and new tools have not been printed. The data recorded in the defaulter tracing form does not enter DHIS2, but is shared with the M&E coordinator at NACP and is used to compile monthly reports as a means of verification/proof of work before the monthly payment is made. Planning for an integrated TB/HIV CHW program is being finalized, following the guidelines in the new TB/HIV strategy.

According to the new TB-HIV strategy, there will be no reduction in the number of TB-HIV CHWs. A new deployment approach will be followed in the seven high burden districts. The TB-HIV CHWs will be redeployed across facilities to achieve the proposed patient-CHW ratio of 1:20 based on

global recommended literature and is a change from the previous strategy of 40 CHWs per district hospital in the 7 high burden districts (GOSL 2019). This shift will allow for an optimization and improved efficiency of the CHW's, maximizing coverage and appropriately distributing workload. The structure of the integrated TB/HIV CHW program is presented below.

Figure 3: Proposed TB/HIV CHW Program



Malaria TBA Program

The Malaria TBA program administered through the NMCP and provides services in all districts; as TBAs are no longer allowed to play the role of being a birth attendant, they have been absorbed by the malaria program. They are often elderly women and illiterate. The TBAs work independently and do not work with the national program CHWs or PS. Although the malaria CHW program took the TBAs under its wing and provided them a role, some national stakeholders feel that they have little connection with the TBAs and little control.

The main role of the TBAs is to administer intermittent preventive treatment in pregnancy with sulfadoxine-pyrimethamine (IPTp-SP) to pregnant women at the community level. As part of their responsibilities they also:

- Conduct hygiene promotion

- Encourage pregnant women to sleep under a treated bed net regularly
- Advise households to clean their environment in order to prevent mosquitoes from biting them
- Accompany pregnant women to the facility to receive the antenatal care (ANC) package, such as bed nets, antihelmintics, deworming, and health education talks ranging from appropriate food intake, exclusive breast feeding, warning foods, etc.

Malaria TBAs do not work with a PS. They receive supportive supervision from the PHU in-charge as well as during the monthly meetings. When PHU staff conduct outreach activities, it offers an opportunity for them to mentor the TBAs on various aspects, including proper recording of information in registers and the role they play accompanying pregnant women to the facility for routine ANC visits. PHU staff at the end of every month work with the TBA to examine their registers to check that the SP/IPTp doses are provided correctly with the right timing and correct number of doses for the appropriate gestational period.

In terms of incentives, the TBAs are given an amount of 100,000 Leones monthly that is paid on a quarterly basis using mobile payment through Orange. Training of TBAs was completed in May/June 2018, but they have not been paid as the payment process has not been streamlined. The TBAs have been trained on how to use the mobile money platform, registered, verified, and provided with a SIM pack to enable payment. TBAs do not receive a transportation allowance although they attend monthly meetings. However, most of the TBAs continue to provide services.

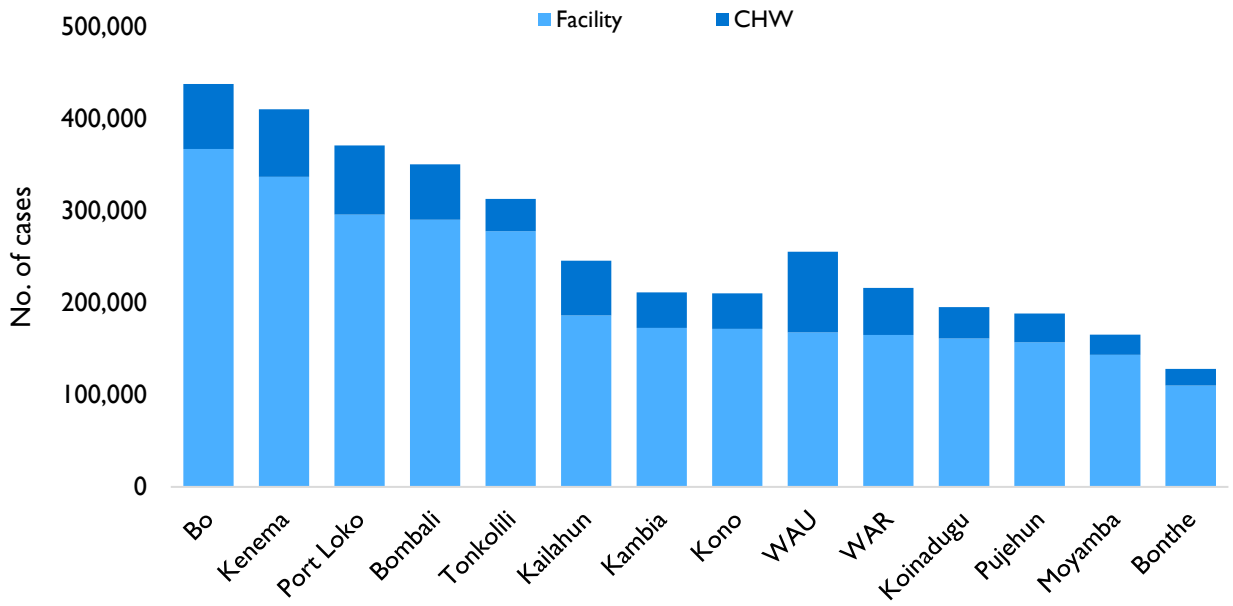
Key Findings:

- The national CHW program in Sierra Leone is a relatively young program based on a policy that was drafted in 2016. It offers the opportunity for review in the early stages to streamline activities going forward.
- The national program has a complicated setup with multiple donors and funding streams and implementers at the national level and across districts. The CHW Hub acts as the national body that coordinates the roles of these groups to ensure that the policy is implemented consistently across all districts and all domains of support across all levels of the health system are sufficiently addressed.
- The national CHW program overseen by DPHC/CHW Hub and the CHW programs of the different disease programs operate in silos within their own domains. There is some overlap in activities of the national CHWs and the malaria TBAs.
- The national CHW program has seen change in funding streams and implementation since its inception based on the revised CHW policy. Some donors, such as DFID, no longer fund the program. There have been transitions with UNICEF taking on a larger role. The implementing partners, such as GOAL, CUAMM, and Concern Worldwide, provide support at the district level but based on a short-term contract in 2019, without clarity on future involvement.
- The national CHW program distinguishes between a CHW's location in an easy- or hard-to-reach area, which are defined in terms of the location of the community at a distance of less than 3 km from a PHU. The typical norm in CHW programs globally is a distance of 5 km.
- Although national CHWs were trained in 2017 and 2018, there is no clear system for training of CHWs who joined the program at a later stage.
- Low levels of literacy are a general concern with all the CHW programs, which has implications for quality of service and reporting.
- Delays and challenges in payment of incentives through Orange is an overall concern across all four CHW programs. This has resulted in attrition in the number of CHWs. Moreover, because it has been time-consuming to handle, it leaves little time for supporting supervision, oversight, and focus on quality of care.
- Verification of the number of CHWs is a consistent concern across the different CHW programs, especially with the national CHW program and malaria TBA program.
- The different CHW cadres receive different benefits, including monthly incentives, transport expenses, and other equipment such as raingear and bicycles. These benefits need to be considered in discussions of integrating the programs.
- The HV CHWs primarily engage in defaulter tracing. Their role should cover provision of other support, including adherence counseling. The program still uses the old defaulter tracing tools as well. These are expected to change with the new TB/HIV CHW integrated program. Overall, there is a feeling that coordination between NACP, NETHIPS, and PIH could be improved.
- The HIV CHW program is reassessing the qualifications of the CHWs who were recruited into the new program. They feel the need to work with community leaders to recommend appropriate candidates with the right qualifications to the DHMT, which may imply that some old CHWs will be let go.

Contributions of CHWs to Service Delivery

CHWs in Sierra Leone are an extension of the formal health system at the community level. They contribute to the PHU's ability to provide primary health services to communities within its catchment area. Using data from DHIS2, Figures 4-8 show the level of primary care services by the PHU and the added contribution by CHWs in each district in Sierra Leone between July 2018 and June 2019. As the figures indicate, CHWs contribute to almost 30% of some of the primary health care services provided in the district. Overall, CHWs administered just under 19% of all the RDTs across the 14 districts of Sierra Leone (Figure 4). CHWs' contribution to use of RDTs for malaria testing ranged from 34% to 11% of all tests performed in the district. Testing with RDTs by CHWs was highest in WAU (34%), Kailahun (24%), WAR (24%), and Port Loko (20%). The lowest proportion of RDTs administered by CHWs was observed in Tonkolili district. In contrast only 11% of RDTs were administered by CHWs as compared to PHUs in the same time period.

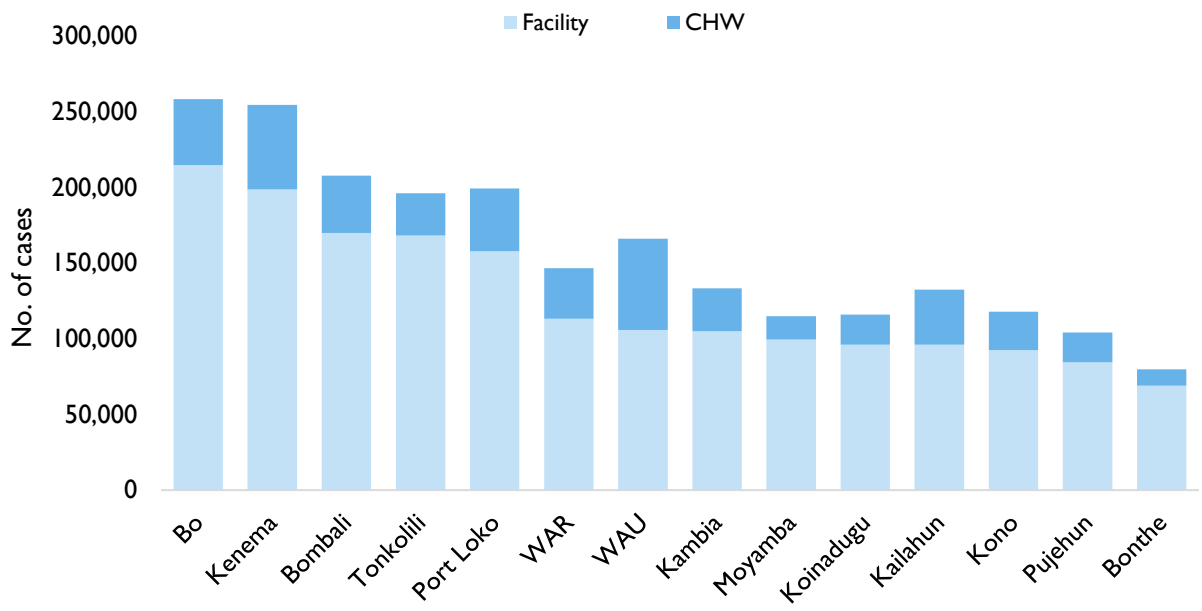
Figure 4. Number of Cases of Fever Tested for Malaria with RDT Administered by the Health Facility and CHWs by District, July 2018–June 2019



Source: Sierra Leone DHIS2

Treating malaria cases is one of the main services provided by CHWs in Sierra Leone. Despite low availability of many essential medicines in some areas, CHWs administered ACT to 20.5% of the malaria cases treated with ACT between July 2018 and June 2019 (Figure 5). Districts with the highest proportion of ACT administered by CHWs during this period included WAU (36%) and Kailahun (27.4%). Districts with the lowest proportion of ACT treatment administered by CHWs included Tonkolili (14%), Bonthe (14%), and Moyamba (13%).

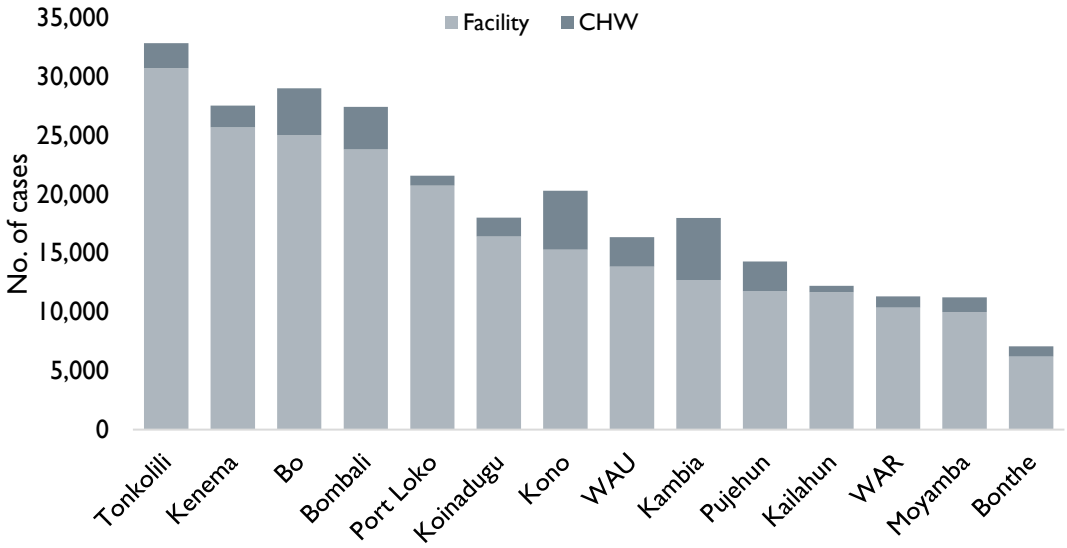
Figure 5. Number of Malaria Cases Treated with ACT by the Health Facility and CHWs by District, July 2018–June 2019



Source: Sierra Leone DHIS2

Across all districts in Sierra Leone, CHWs treated about 12% of diarrhea cases with oral rehydration solution (ORS) and zinc between July 2018 and June 2019 (Figure 6). The proportion of these cases attended by CHWs as compared to health facility staff was highest in Kambia (29%) and Kono (25%) districts. In Kailahun and Port Loko districts, CHWs treated only 4% of the diarrhea cases with ORS and zinc.

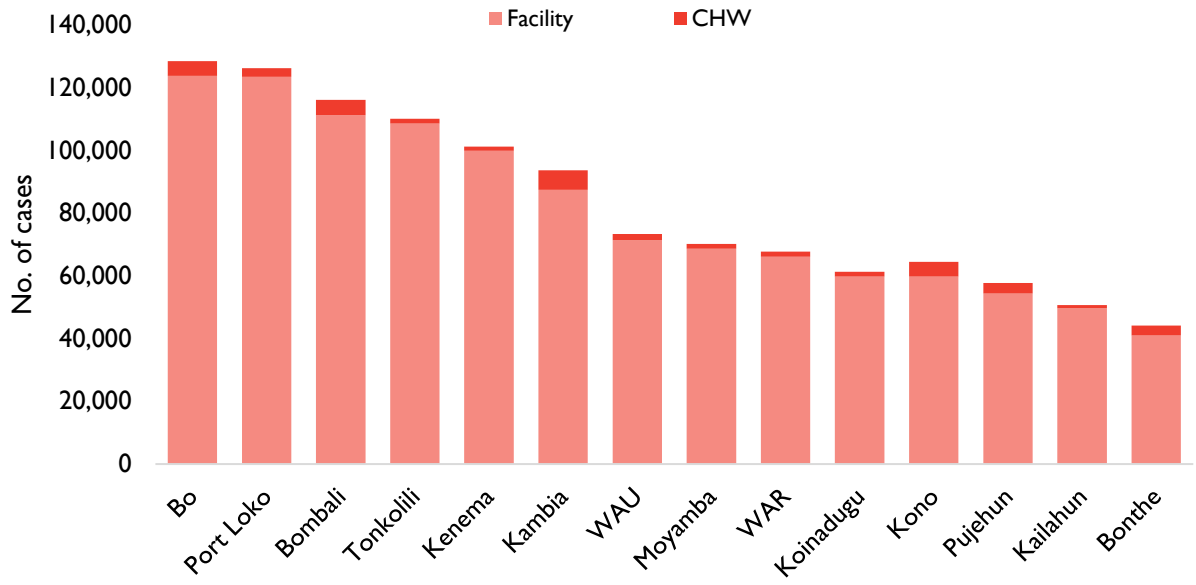
Figure 6. Number of Diarrhea Cases Treated with ORS and Zinc by the Health Facility and CHWs by District, July 2018–June 2019



Source: Sierra Leone DHIS2

As compared to malaria and diahrrea services, CHWs treated a much smaller proprtion of acute respiratory infection (ARI) cases with antibiotics (3.4% of cases treated) during the same time period. The highest proportion of cases attended by CHWs were observed in Bonthe (7.1%) and Kambia (6.7%) (Figure 7). Districts with the lowest proportion of ARIs treated with antibiotics by CHWs were Tonkolili (1.4%) and Kenema (1.3%).

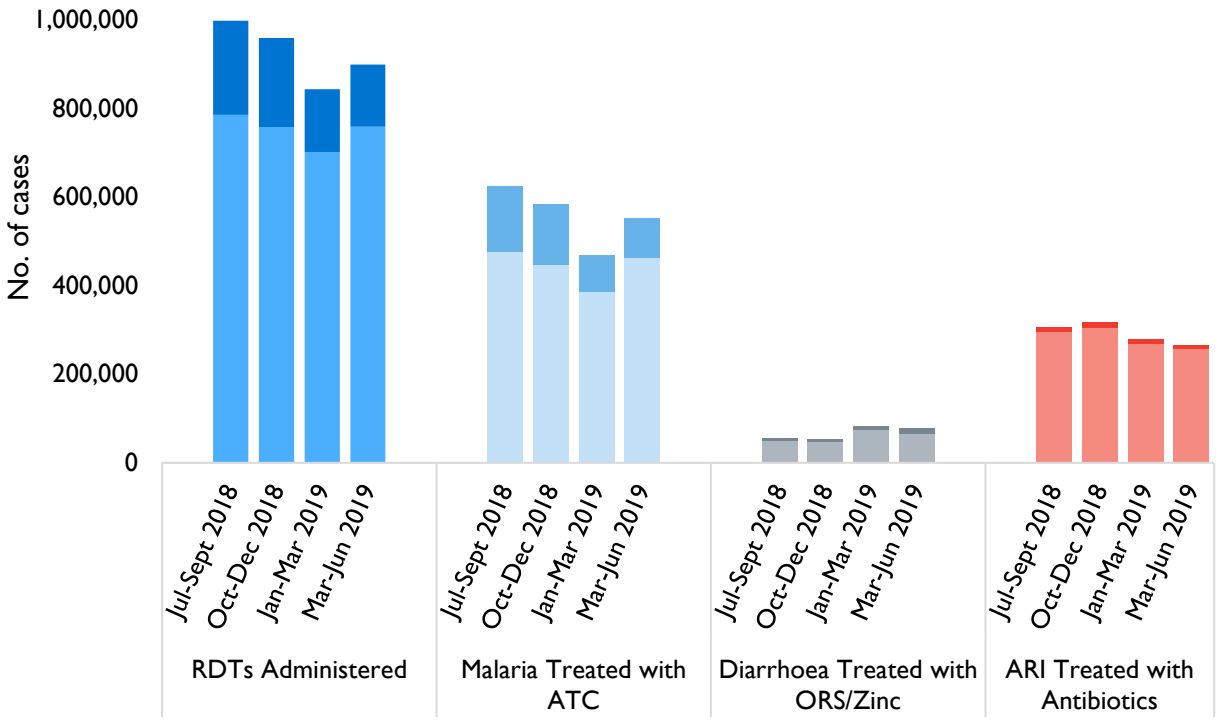
Figure 7. Number of ARI Cases Treated with Antibiotics by the Health Facility and CHWs by District, July 2018–June 2019



Source: Sierra Leone DHIS2

Overall, looking at the breakdown of services provided by CHWs as compared to health facilities, it is clear that CHWs contribute largely to malaria testing (19% of cases tested) and treatment (20.5% of cases treated) (Figure 8). Interestingly, the highest contribution to malaria services by CHWs was in WAR and WAU despite the fact that they have far fewer CHWs as compared to the other 12 districts in the country. Smaller impacts related to the contribution of CHWs were observed in treatment for diarrhea (12.3%) and ARI (3.4%). However, this could be due shortages in commodity availability.

Figure 8. Number of Cases Attended by the Health Facility and CHWs by District, July 2018–June 2019



Source: Sierra Leone DHIS2

CHW Reporting System Process Evaluation

This section focuses on the findings of the process evaluation of the CHW reporting system. These findings include the results of the DQA and qualitative interviews and focus on understanding the quality of data reported through the CHW data system, functionality of the reporting system, and barriers associated with collecting, documenting, compiling, and reporting CHW data at each level of

Research question:

What is the overall quality of CHW reporting and what are the opportunities for and barriers to reporting quality data?

- How complete and timely is the reporting of community data at each level (CHW, PS, PHU, DHMT)?
- What are the levels of reliability (completeness and consistency as a proxy for accuracy) of tracer indicators (malaria RDTs and ACT, household visits, commodity availability, etc.) at each level?
- What are the barriers to and opportunities for improving the completeness and accuracy of reporting of community data at each level (CHW, PS, PHU, DHMT)?
- What gaps exist in the reporting process?

the health information system. Results of the CHW reporting system process evaluation only focus on data captured and reported by CHWs working through the national program.

As part of their activities, CHWs from the national program collect a variety of data elements that are compiled and aggregated at multiple levels of the health system. To capture the services they provide to the community, CHWs use three registers to document their activities: the reproductive, maternal, newborn, and child health (RMNCH) register; community-based surveillance register; and iCCM register. These registers use carbon papers and at the end of each month (or at the end of each quarter in the case of the community-based surveillance register), CHWs tear out the original pages from their registers and submit them to their PS. The PS then compile data from the CHWs they supervise into their register. These pages of compiled CHW data are then submitted to the PHU. The PHU then uses the data submitted by the PS to compile their Health Facility Report 6 (HF-6) form. The paper copy of the HF-6 form is then submitted to the DHMT. There, paper reports are entered into DHIS2 and compiled with the HF-6 reports from all the health facilities in each district. Once this is completed, CHW data for the district are available through the DHIS2 platform to the national CHW hub. Figure 9 depicts this process.

Figure 9: National CHW Data Flow from Community to National Level

While Figure 9 depicts the intended pathway for CHW data flow from the community to the national level, the assessment found some deviations from this pathway. Multiple PS and PHU in-charges interviewed in WAU district indicated that PS were not working through the PHU to transmit data from the CHWs. Instead, PS reported that they compiled the data from their CHWs and reported it directly to the DHMT.

Quality of Reported Data

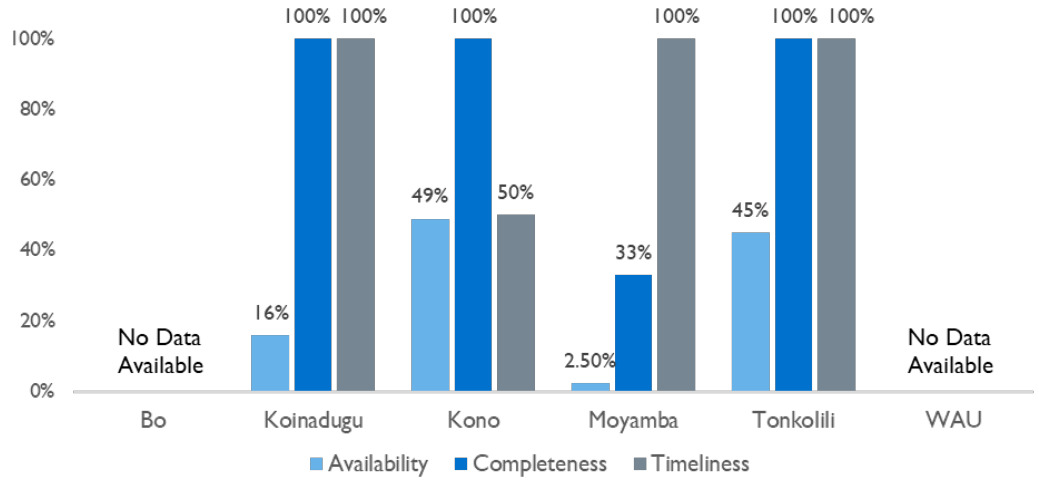
Through the process of conducting the assessment, the research team found many instances at multiple levels of the health information system where the original source data (i.e., CHW registers or PS registers) were not available at the time of the assessment. The lack of source documents prevented the team from adequately conducting data verifications for selected indicators collected and reported by CHWs. These issues are indicative of an overall lack of proper archiving procedures. The availability of source documents is imperative to monitoring a program's health information system.

Availability of reports and their completeness and timeliness of submission are characteristics of a well-functioning reporting system and demonstrate that data are documented, reviewed, and shared appropriately. Though the team was unable to perform data verifications, they were able to assess the

availability of reports, completeness of the submitted reports (i.e., to what degree were all the necessary fields in the report are filled in), and whether or not the reports were submitted on time.

When assessing the availability of CHW data submitted to PS, the team found that all six districts assessed had either less than half the necessary data available for review or no source data at all that could be reviewed as part of the DQA. In Kono district, only 49% of reports of captured data from the selected CHWs was available. Of the available CHW reports, 100% of what was received by PS was complete, meaning that all the relevant fields were filled out, but only 50% of the data from CHWs were received by the PS on time. Similar results were seen in Tonkilili district, which had 45% of their CHW data available, but all the reports were fully completed and received on time. In Koinadugu, only one of the two PS interviewed had CHW data available. That PS only had 31% of CHWs' reports available, all of which were complete and received on time. Similarly, only one of the two PS interviewed in Moyamba district had data available for the CHWs they supervised. However, this PS only had 5% of the expected CHW data available, only one-third of which were fully completed, but all of the CHW data that were received by the PS were received on time. Finally, none of the PS interviewed in Bo district or WAU district had data available for any of the CHWs they supervised. In these cases, some reported that CHWs had not been documenting their activities because they did not have commodities to dispense. Additionally, multiple PS in these districts explained that there were no clear archiving practices for CHW data submitted to PS each month, and because of this, some PS were not keeping the individual register sheets from their CHWs after they recorded the results in the PS register.

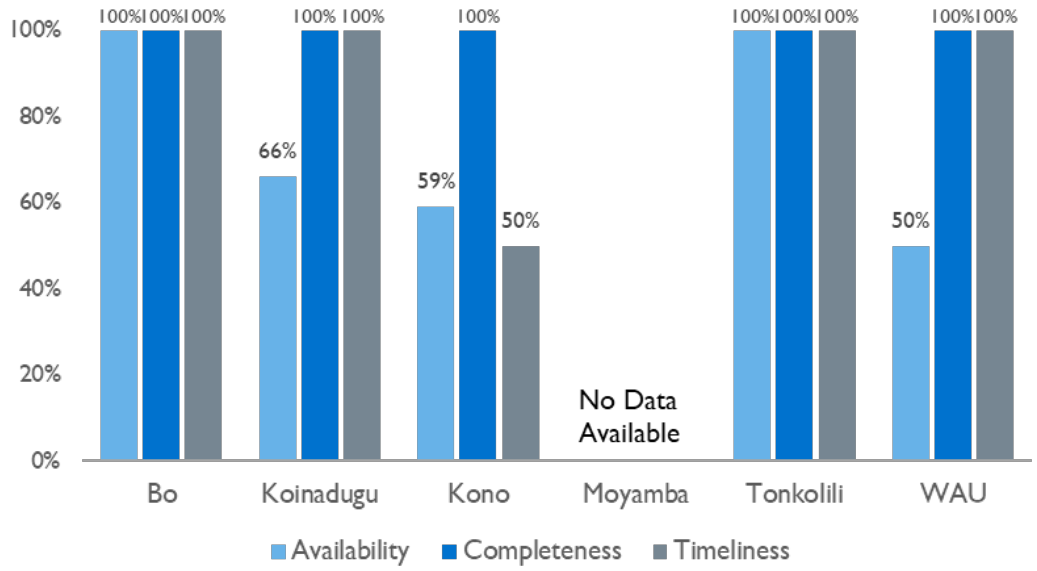
Figure 10: Availability, Completeness, and Timeliness of CHW Data



Review of PS reports submitted to PHUs were more available than those observed for the CHW data. Teams in both Bo and Tonkolili districts were able to access 100% of the expected PS reports to the PHU. All of these reports were fully completed and submitted on time. In Koinadugu, two-thirds of the reports from PS were available for review and in Kono district, 59% of PS reports were available. In both these districts, 100% of the reports from the PSs were complete and received by the PHU on time. Only one of the two health facilities visited in WAU had PS reports available for review. At this facility, all of the expected PS reports were available at the facility and all of them were complete. However, none of the reports could be assessed on whether or not they were received on time since the date received was not documented on the reports. For the facility that did not have PS

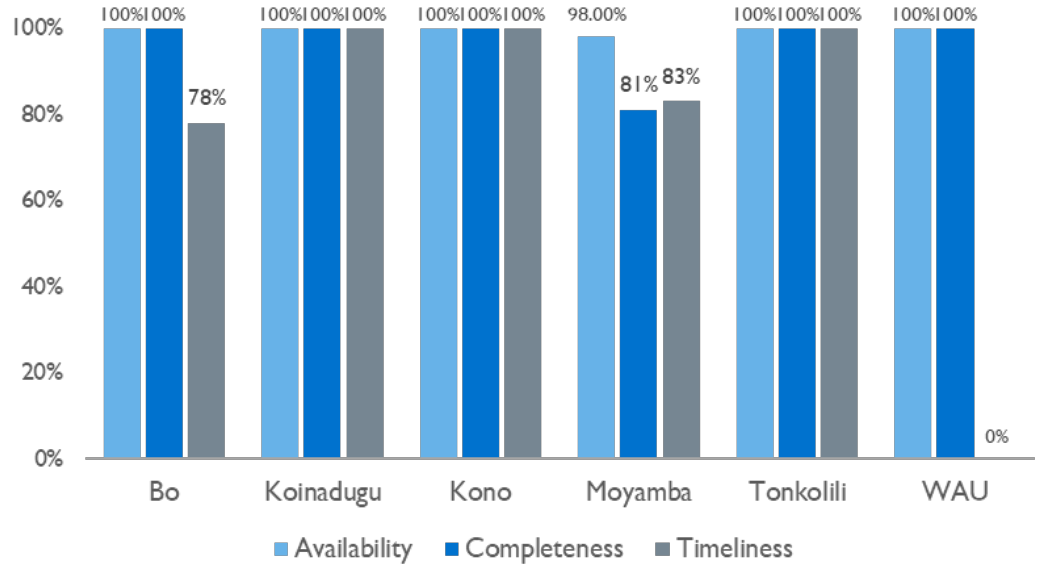
reports to review, the PHU in-charge and PS both confirmed that the PS submitted their reports directly to the DHMT rather than to the PHU in-charge, which is a different procedure than should be followed. Finally, in Moyamba district, neither of the two health facilities visited had reports from the PS available for review.

Figure 11: Availability, Completeness, and Timeliness of PS Reports



At the DHMT level, there was greater availability of reports from PHUs on CHW activities. Koinadugu, Kono, and Tonkolili districts all had 100% of the HF-6 reports available from PHUs, and all of them were found to be fully completed and received on time. Bo district and WAU district also had 100% of the expected PHU reports available and fully completed. However, in Bo district, only 78% of reports were received on time and in WAU district, no date stamping was used; therefore, the research team could not determine the timeliness of the reports received from PHUs in this district. Lastly, Moyamba district had almost all (98%) of the reports from the PHUs available for review. Of those reports, 81% of them were fully completed and 83% of them were received by the DHMT on time.

Figure 12: Availability, Completeness, and Timeliness of PHU Reports



Training, Skills, and Support Received

Almost all of the CHW and PSs interviewed indicated that they received initial training on how to capture and report their activities as part of the multimodule training they participated in as part of preservice training. However, since that time, they had not received any formal follow-up or refresher training on how to document, and in the case of the PSs, how to compile data from the community level. Those who did not participate in the initial training received informal on-the-job training on how to document their activities. Despite not receiving any formal follow-up training, most CHWs indicated that they did receive feedback or sat and reviewed the data they collected with their PS either once a month or once a quarter. Most indicated that this feedback was seen as useful and helped CHWs plan their future activities.

PSs expressed more frustration with the lack of follow-up training on data collection and reporting. Some discussed their difficulties in reviewing and compiling data from their CHWs. Many felt that they did not have all the necessary tools or information to effectively report accurate data from the community level.

Key Findings

- There is minimal availability of source documents (sheets from CHW registers, PS reports, facility HF-6 reports, etc.), which are imperative to monitoring the quality of data reported through the health information system.
- Because source data were not available for review, the quality of the data cannot be determined. Moreover, given the lack of structure and guidance received specifically related to data collection and reporting, the quality is likely to be poor.
- While data availability, completeness, and timeliness improved as one moved up the system from the community to the national level, it is still difficult to trust that data at the higher levels since they cannot be verified from CHWs.
- Documentation was often linked to the availability of commodities. If CHWs did not have commodities available, some would not record interactions with their clients because they felt that if they were not giving a test or a medication then they were not providing a service.

Beyond feeling that they were not adequately trained to compile and report data on CHW activities, the majority of PS indicated that they did not receive regular feedback on reports they submitted to the PHU. Similarly, many of the PHU in-charges interviewed stated that they had not been formally trained on how to review PS reports and compete the HF-6 form to report CHW data.

Barriers to Data Collection and Reporting

Barriers to data capture, documentation, management, and reporting were discussed across all levels of the CHW health information system. Some barriers were consistent across all the levels, while others were specific to certain groups and/or levels.

CHW-Level

CHWs discussed many barriers related to collecting and reporting data based on their activities. These barriers were mostly universal across all six districts and included difficulty documenting their work, a lack of clarity on the reporting indicators, difficulty understanding the form, and a lack of guidance and/or refresher training. For issues around documentation, CHWs in half the districts assessed as part of this study reported that the registers contained too many indicators for them to capture. Further, a small portion of CHWs explained that they were sometimes unclear or confused about what the indicators meant and therefore how they should be captured in the registers:

Key Findings

- There is minimal formal training on collecting and reporting CHW data at all levels of the program—from PHU to DHMT.
- CHWs expressed a strong desire for formal refresher training.
- PS currently review data with their CHWs but most do not feel that they are well equipped to verify data collected by CHWs and/or to accurately complete the PS report.

***"The indicators are too many in the register to enter, and that sometimes confuses me…"* – CHW, Koinadugu District**

Beyond understanding what should be documented as they provide services in the community, some CHWs discussed how they found writing in the register challenging. Some of the CHWs are illiterate and in order to document their work, they often they ask someone else, either a peer or a family member, to help them record information in their registers. This can potentially impact the quality of the information being recorded because the documentation often takes place long after the CHW has provided services to the client, and in some cases the services might not be documented at all because of their inability to recall all the details of their interactions and the services administered. Another challenge affecting accurate documentation was that CHWs sometimes left registers behind when they did their visits because they were heavy, and, as a result, the information was recorded at a later time.

Adding to the difficulties of documenting, many CHWs discussed structural issues with the registers. Most of these CHWs indicated that the boxes were too small to write all of the information they are required to collect. Some also mentioned having particular difficulty documenting information in the RMNCH registers because of how they are organized, meaning that some found it difficult to go back and update the record for each individual patient every time they provided services rather than documenting each individual visit as a single row in the register.

"Registers don't have enough space to record all of the information" – CHW, Bo district

All CHWs, with the exception of some in Koinadugu district, reported that they did not have blank registers available to them. Instead, when their register was full, they often had to document information in their personal notebooks. Additionally, many discussed not having a place to store completed registers and that in general they found it difficult to keep them in good condition as they used them day to day. One CHW suggested that the registers have a protective cover to make them more durable.

Another major barrier discussed by CHWs was the lack of guidance on collecting, recording, and reporting data. About half the CHWs across all districts indicated that they had job aids available to help them document their activities, while the other half reported not having a job aid. Most reported that they did receive feedback regularly from their PS, which involved them reviewing together the data reported by the CHW:

***" [I] often have mistakes within [my] reports and the PS has to help [me] correct."* – CHW, Moyamba district**

Lack of Standards: An interesting observation was the variance in documenting the administration of RDTs. In the registers, it directs CHWs to indicate the result as a "+" for positive RDT results and a "-" for negative RDT results. Blank cells would indicate that no RDT was performed for that patient. However, in some cases, CHWs had been directed to express a negative RDT result as a "0" rather than a "-". This led to confusion and compilation issues with some PS reports where they were simply documenting a "0" for CHWs who only had negative RDT results rather than the count of RDTs administered, leading them to report a significantly lower number of RDTs than what were actually administered.

A small number of CHWs indicated that they did not receive support from their PS and did not meet with them regularly. Though many CHWs received ongoing support from their supervisor, almost all reported that they desired to have a refresher training so that they could have a better understanding of how they should be documenting their services.

Peer Supervisor Level

Barriers reported by PS were similar to those reported by CHWs, but the late submission of data from the CHWs was discussed most often as a major barrier to fulfilling their role as a PS. Late submissions from the CHWs lead PSs to also submit their reports to the PHU late or potentially result in them not reporting all of the data from their CHWs. Another chief complaint from PS was the need for a job aid that would help them fill the supervisors register, because like the CHWs, PS also felt that they needed additional and/or ongoing training to do their work.

***"I find it very difficult to compile data in the PS register because I was not trained."* – PS, Moyamba district**

PS in all six districts indicated having some level of difficulty reviewing and compiling CHW data for their reports, particularly when it came to calculating totals for the services or commodities used by their CHWs. One even further commented on concerns over their ability to verify the quality of the data reported to them by CHWs.

***"If data are wrongly entered by CHWs, [it is] difficult to know how to fix it"* – PS, Tonkolili district**

Lastly, similar to CHWs, PS also reported that they did not have any blank registers available, forcing them to document in notebooks when their registers were full. Further, they expressed difficulty with not only storing and/or archiving their own registers but also with archiving the reports submitted to them by the CHWs. There were no clear protocols in place, but most indicated that registers and CHW reports were stored at the PHU. However, when the research team was in the PHU, they were in all cases unable to find all of the CHW reports for the period reviewed. As a result, the quality and validity of data cannot be determined.

PHU Level

PHUs did not have as many barriers related to reporting CHW program data as compared to the CHWs or the PS. The biggest concern expressed was the issue of timeliness of reports submitted by PS. PHUs in most districts indicated that reports from PS were often delayed, and there were some cases in Koinadugu where PS were not reporting at all. PHU in-charges also discussed challenges with archiving data reported by the CHW and compiled by the PS. In the majority of cases observed by the research team, these documents were not readily available, which was noted by in-charges because it impeded their ability to adequately review PS reports.

***"PS often do not have physical evidence of CHW work that can be verified when reviewing the reports."* – PHU in-charge, Koinadugu district**

Lastly, about half the PHU in-charges interviewed expressed that they were never trained on how to compile the HF-6 form to report CHW data, making it difficult for them to know if they are submitting the correct information.

DHMT Level

CHW focal persons interviewed at the DHMT did not discuss their own personal barriers to reviewing, compiling, and reporting CHW data but rather some of the barriers they had observed on the ground. They most commonly discussed the lack of blank registers and referral forms for CHWs and PSs, which was cited in all six districts. The need for refresher training was also discussed by all of the CHW focal persons. They discussed the difficulty CHWs had filling the registers as well as the some of the mistakes in their reporting, all of which could be addressed through a combination of refresher training and long-term on-the-job mentoring. In addition to the training, CHW focal persons in most districts also suggested modifying the CHW registers to make them easier for CHWs to manage. Such changes included simplifying the layout of the registers and also using pictures to represent indicators so it will be easier for CHWs to understand what they should be recording.

Specifically, IRC, which implements the CHW program in Kono, reported that the PS in Kono found it challenging to work with the PHUs to compile the data for the HF-6 form. They have designed a slightly different form to compile the data from CHWs that makes completion of the HF-6 form easier. This had an impact on the quality of reporting in the HF-6 in the months after the new HF-6 form was rolled out in March 2019.

National Level

Perceived barriers by the national CHW program related to data collection and reporting included difficulties recording data, issues related to understanding what they should be reporting, and evidence of nonreporting by some CHWs. Filling the various CHW registers was not consistent, and there were many discrepancies in the data sent through the health information system, This could be related to CHWs not understanding the indicators, as well as PS not understanding how they should be summarizing the data collected by their CHWs, highlighting the need for refresher training. They also discussed cases where many CHWs were just not reporting, a finding consistent with observations at the lower levels of the program. This is partially a result of inactive CHWs who were not officially working, although in most cases it was CHWs were providing services and/or household visits but not recording these activities. A main reason as to why this was happening could be related to the lack of commodities available to the CHWs. Many felt that if they did not have medicines or tests to provide to their clients, they were not providing services and therefore the visit did not need to be recorded.

In addition to discussing challenges for CHWs and PS, the national program also discussed their major barrier to reporting and managing data for the CHW program—lack of M&E staff to adequately manage all of the data being collected. Currently only one person manages data from all 14 districts, leaving little time to look into issues of data quality and provide meaningful and timely feedback to the lower levels of the system.

Key Findings

- There is a lack of understanding about indicators by some CHWs collected through the CHW registers. Some CHWs indicated that they get confused by what the indicator means and what should be recorded in some of the columns of the registers, affecting reporting as a result.
- CHWs expressed difficulty documenting their activities mostly due to the structure of registers. The areas for them to write in were small The structure of the RMNCH register was also a challenge for documentation because it captured continuous information for each client rather than having a line for each day that services were rendered. They were also overwhelmed by the sheer number of indicators for which they were required to capture data.
- PS struggled to compile timely reports because CHWs were often late submitting their data to them. Similarly, PHU in-charges had difficulty compiling timely reports due to the late submission of PS compilation reports.
- A lack of proper archiving made it difficult to review and verify reports before they were submitted to the next level.
- The DHMTs acknowledged challenges related to the availability of blank registers and referral forms.
- The CHW program at the national level recognizes the need for additional refresher training particularly for CHWs and PS as well as a need for additional personnel to handle programmatic M&E needs.

Gaps in the Data Collection and Reporting System

Almost all respondents mentioned the lack of data collection and reporting tools, referral slips, and CHW performance assessment forms as a major gap in the system that affects the timeliness and completeness of records. When tools/forms are available, CHWs complained that they find them too heavy to carry around during visits in the community, which can introduce error when the data are recorded, contribute to incomplete records, or cause delays in reporting. PS additionally reported that some CHWs' illiteracy/limited literacy—poor handwriting, unfamiliarity with or difficulty spelling medical terms, or altogether inability to write or read—contributes to poor documentation and puts additional pressure on peer supervisors.

CHW Service Quality Process Evaluation

This section focuses on the findings of the evaluation of CHW service quality provision. These findings include results from the CHW survey, material audit, and beneficiary survey conducted in six districts of Sierra Leone. They focus on background demographics of the various cadres, the type and quantity of services provided by each cadre, the health systems components in place to support the work of CHWs, and CHW's skills to provide quality services.

Research question

- What quantity and types of services (malaria treatment, etc.) are delivered by CHWs (as compared to health facilities)?
    - What is the level of CHW services by service type (e.g., average number of household visits per month, average number of cases of fever in children seen per month, etc.)?
    - What are the beneficiaries' perceptions of the services provided by CHWs?
    - What is the overall quality of CHW services provided to beneficiaries?
    - What are the levels of CHW readiness and skills to provide high-quality care?
    - What materials, equipment, supplies, and health system supports (training, supervision, motivation, etc.) are available to CHWs to provide high-quality services?
    - What is the perceived quality of care and satisfaction with services provided by CHWs?

Demographic Profile of CHWs

Table 5 summarizes the demographic background characteristics of national CHWs in six districts of Sierra Leone. The age of CHWs ranged from 19 to 72 years with a median age of 36 years. In most districts, with the exception of WAU, the majority of national CHWs were men. Overall, nearly two-thirds of national CHWs in the six districts sampled were male, and most CHWs were married (80%). According to national guidelines, there is no minimum requirement of education or literacy for national CHWs, although the policy states that literacy is preferred. Across the six sampled districts, the highest level of education attained by most CHWs was junior or senior secondary school (63%). However, in Koinadugu, Tonkolili, and Bo districts, approximately one in five CHWs reported no formal education. As such, it is unsurprising that literacy among national CHWs was lowest in these three districts, with 70% of the national CHWs literate in Bo, 73% in Tonkolili and 76% in Koinadugu. The proportion of literate CHWs was highest in Kono, WAU, and Moyamba at 88%, 93%, and 96%, respectively. Despite this, discussions with program managers and stakeholders showed that CHWs' ability to record information in the required forms was still a challenge. They also did not have a clear understanding of the definitions of the different indicators they were reporting on.

Most national CHWs in the six districts sampled had one to two years of experience (61%), which is consistent with the rollout of the national CHW policy in 2016. The one exception to this trend was in Tonkolili, where nearly half of all CHWs reported between five and 10 years of experience. The survey also asked about work outside of performing CHW duties. Reports of outside employment ranged from 41% in WAU to 91% in Bo. Overall, across the six districts, 77% of CHW reported some outside employment. In the more rural districts, outside employment largely consisted of agriculture. Sales and services made up the largest source of outside employment in WAU.

Table 6 provides background demographic information on malaria TBAs, and TB and HIV CHWs. Compared to national CHWs, TBAs were older, with a median age of 50, ranging from 24 to 80 years. The median age of HIV CHWs and TB CHWs was 36 and 30 years, respectively. With the exception of TB CHWs who were made up of 70% men, the majority of HIV CHWs were women and all TBAs were women. The highest level of education attained by most "other" CHWs was senior secondary school (35%). Most TB CHWs (76%) and HIV CHWs (54%) attained either a senior secondary or tertiary and higher education. However, 77% of TBAs reported no formal education. Following trends among national CHWs, the group with the lowest level of educational attainment had the lowest proportion of literacy. While most TB CHWs (94%) and HIV CHWs (96%) were literate, just 19% of TBAs were literate affecting their ability to report data.

Eighty percent of TB CHWs and 83% of HIV CHWs reported one to two years of experience. TBAs reported slightly more experience, with 72% reporting one to four years of experience. Many CHWs across the three cadres reported employment outside of performing CHW duties, with 75% of TBAs reporting outside employment compared to 41% of TB CHWs and 46% of HIV CHWs. The most common source of outside employment for TBAs and TB CHWs was agriculture, while 33% of HIV CHWs reporting outside employment, were employed in sales and services.

Table 5: National CHW Demographic Profile

	Bo N=80		Koinadugu N=75		Kono N=75		Moyamba N=76		Tonkolili N=67		Western Area Urban (WAU) N=56		Total N=429	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Age														
18-24	6	8	13	17	3	4	8	11	2	3	3	5	35	8
25-34	13	16	27	36	17	23	30	40	31	46	19	34	137	32
35-44	15	19	20	27	36	48	20	26	22	33	11	20	124	29
45-54	30	38	9	12	15	20	9	12	9	13	19	34	91	21
55+	16	20	6	8	4	5	9	12	3	5	4	7	42	10
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Sex														
Male	52	65	49	65	53	71	62	82	39	58	21	38	276	64
Female	28	35	26	35	22	29	14	18	28	42	35	63	153	36
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Marital Status														
Married/In Union	68	85	59	79	65	87	66	87	57	85	30	54	345	80
Single	7	9	12	16	7	9	9	12	8	12	17	30	60	14
Separated/Divorced/Widowed	5	6	4	5	3	4	1	1	2	3	9	16	24	6
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Education														
None	15	19	18	24	6	8	2	3	16	24	2	4	59	14
Primary	13	16	5	7	12	16	3	4	10	15	2	4	45	11
Junior Secondary	22	28	6	8	36	48	21	28	9	13	8	14	102	24
Senior Secondary	23	29	28	37	19	25	37	49	30	45	33	59	170	40
Tertiary and Higher	7	9	18	24	2	3	13	17	2	3	11	20	53	12
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Literacy														
Literate*	56	70	57	76	66	88	73	96	49	73	52	93	353	82

Table continued on next page.

Experience (Years as National CHW)														
Less than 1 year	1	1	0	0	0	0	1	1	0	0	0	0	2	1
1-2 years	61	76	68	91	14	19	56	74	14	21	47	84	260	61
3-4 years	15	19	7	9	50	66	19	25	18	27	4	7	113	26
5-10 years	1	1	0	0	9	12	0	0	33	49	5	9	48	11
More than 10 years	2	3	0	0	2	3	0	0	2	3	0	0	6	1
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Any other occupation	73	91	54	72	68	91	55	72	58	87	23	41	331	77
Occupation Type**														
None	7	9	21	28	7	9	21	28	9	13	33	59	98	23
Professional	10	13	11	15	4	5	15	20	2	3	0	0	42	10
Clerical	1	1	0	0	0	0	0	0	0	0	0	0	1	0
Sales and Services	6	8	5	7	3	4	0	0	11	16	17	30	42	10
Manual Labor	3	4	0	0	2	3	1	1	1	2	3	5	10	2
Agriculture	56	70	39	52	64	85	39	51	44	66	0	0	242	56
Domestic Service	3	4	1	1	1	1	1	1	5	6	2	4	12	3
Other	3	4	1	1	1	1	0	0	0	0	1	2	6	1

*Literate includes CHWs who attended senior secondary school or higher and those who were able to read the whole or part of the sentences provided.

**Multiple response options possible. Percentages may not add to 100%.

Table 6: TBA, TB, and HIV CHW Demographic Profile

	TBA N=57		TB Community Health Worker N=89		HIV Community Health Worker N=24	
	n	%	n	%	n	%
Age						
18-24	1	2	12	14	3	13
25-34	3	5	46	52	7	29
35-44	11	19	17	19	9	38
45-54	19	33	6	7	5	21
55+	23	40	8	9	0	0
Total	57	100	89	100	24	100
Sex						
Male	0	0	62	70	5	21
Female	57	100	27	30	19	79
Total	57	100	89	100	24	100
Marital Status						
Married/In Union	37	65	48	54	9	38
Single	0	0	39	44	12	50
Separated/Divorced/Widowed	20	35	2	2	3	13
Total	57	100	89	100	24	100
Education						
None	44	77	4	5	0	0
Primary	7	12	7	8	2	8
Junior Secondary	3	5	10	11	9	38
Senior Secondary	3	5	46	52	10	42
Tertiary and Higher	0	0	22	25	3	13
Total	57	100	89	100	24	100
Literacy						
Literate*	11	19	84	94	23	96
Experience (Years as CHW)						
Less than 1 year	0	0	1	1	1	4
1-2 years	22	39	71	80	20	83
3-4 years	19	33	15	17	1	4
5-10 years	8	14	2	2	2	8
More than 10 years	8	14	0	0	0	0
Total	57	100	89	100	24	100
Any other occupation	43	75	36	41	11	46

Other occupation**						
None	14	25	53	60	13	54
Professional	0	0	4	4	3	13
Clerical	0	0	0	0	0	0
Sales and Services	6	11	8	9	8	33
Manual Labor	1	2	2	2	0	0
Agriculture	37	65	17	19	0	0
Domestic Service	3	5	2	2	0	0
Other	0	0	4	4	0	0
District						
Bo	10	18	12	14	10	42
Koinadugu	10	18	17	19	0	0
Kono	10	18	15	17	0	0
Moyamba	10	18	17	19	0	0
Tonkolili	10	18	10	11	0	0
Western Area Urban	7	12	18	20	14	58
Total	57	100	89	100	24	100

*Literate includes CHWs who attended senior secondary school or higher and those who were able to read the whole or part of the sentences provided.

**Multiple response options possible. Percentages may not add to 100%.

Key Findings

- The majority of national CHWs were male (64%) and literate (82%), and the median age was 36 years old.
- TBAs were all women, with much lower literacy rates (19%) and older (median age of 50) than other cadres.
- TB CHWs were largely male (70%) and highly literate (94%), with a median age of 30.
- HIV CHWs in the two districts sampled were majority female (79%) and highly literate (96%), with a median age of 36.

Type and Quantity of Services

Table 7 summarizes the type and quantity of services offered by national CHWs. Overall, community mobilization and engagement was the most commonly cited activity carried out by national CHWs, reported by nearly 85% across the six districts sampled, ranging from 68% of CHWs in Bo to 97% of CHWs in Kono. The second most commonly reported service provided by CHWs included RMNCH services, defined as nutrition, family planning, immunization, ANC and PNC, etc., reported by 81% of national CHWS, which was mostly consistent across districts, with the exception of Tonkolili, where only 55% of CHWS reported providing these services. Management of sick children was the third most commonly reported service by national CHWs, reported by 71% across the six districts. However, only 41% of CHWs in Koinadugu reported providing these services, compared with 92% of CHWs in Moyamba. Kono was one district that stood out from the rest in terms of offering most of the services

outlined in the national CHW policy, with most CHWs reporting providing iCCM, RMNCH services, community-based surveillance, community mobilization and engagement, and community mapping and household registration. Overall, the least commonly reported service outlined in the national policy was community sensitization to HIV/TB, reported by only 23% of national CHWs.

National CHWs reported working on average 4.8 days per week, ranging from 3.8 in WAU to 5.8 days in Kono. Among CHWs reporting working nine or fewer hours per day, the mean hours per day worked was 4.5. The administration of the survey during the rainy season may have affected responses, as CHWs would have been less likely to spend time on outside sources of employment, like farming, during the rainy season. The size of catchment areas served by national CHWs, and therefore the number of households they were responsible for serving, varied by district. CHWs reported a majority of catchment areas in Bo, Kono, and Moyamba contained 60 or fewer households, whereas a majority of CHWs reported catchment areas in Koinadugu and Tonkolili contained 90 or more households. WAU was split more evenly with approximately half of CHWs serving catchment areas with 60 or fewer households and half serving catchment areas with more than 60 households, although nearly one-third of CHWs reported catchment areas of 121 or more households. The size of catchment area is important because according to national policy, CHWs are required to visit all households in their catchment areas on a quarterly basis to conduct community mapping, assess the health needs of the household, identify pregnant women and women of reproductive age, and provide education/sensitization on healthy

Table 7: National CHW: Type and Quantity of Services

	Bo N=80		Koinadugu N=75		Kono N=75		Moyamba N=76		Tonkolili N=67		Western Area Urban (WAU) N=56		Total N=429	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Services Provided*														
Community mapping and household registration	26	32	37	49	70	93	56	74	36	54	31	55	256	60
Community mobilization and engagement	54	68	70	93	73	97	54	71	62	93	50	89	363	85
RMNCH services (nutrition, family planning, immunization, ANC, PNC, etc.)	67	84	63	84	68	91	66	87	37	55	48	86	349	81
ICCM for sick children	48	60	31	41	73	97	70	92	41	61	42	75	305	71
Community-based surveillance	53	66	44	59	61	81	34	45	58	87	42	75	292	68
Community sensitization to HIV/TB	21	26	29	39	22	29	11	15	10	15	6	11	99	23
Other services	44	55	10	13	7	9	3	4	14	21	6	11	84	20
Avg # Days per week worked	4.6		4.9		5.8		5		4.2		3.8		4.8	
Number of households in catchement area														
30 or fewer	28	35	8	11	21	28	26	34	1	2	7	13	91	21
31-60	28	35	13	17	22	29	23	30	11	16	18	32	115	27
61-90	9	11	7	9	10	13	13	17	19	28	9	16	67	16
91-120	5	6	16	21	5	7	4	5	13	19	5	9	48	11
121+	10	13	31	41	17	23	10	13	23	34	17	30	108	25
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Last Community Profile Update														
Never	2	3	3	4	1	1	2	3	0	0	1	2	9	2
In the last 3 months	56	70	57	76	67	89	49	65	35	52	39	70	303	71
In the last 3-6 months	12	15	10	13	6	8	16	21	17	25	13	23	74	17
In the last 6-12 months	5	6	3	4	1	1	6	8	3	5	2	4	20	5
More than 1 year ago	5	6	2	3	0	0	3	4	12	18	1	2	23	5
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Location where services provided*														
Health facility	25	31	24	32	30	4	34	45	4	6	33	59	150	35
CHW's home	42	53	36	48	59	79	45	59	66	99	36	64	284	66
Community Member's home	68	85	72	96	65	87	63	83	45	67	55	98	368	86
Other location	28	35	11	15	5	7	1	1	9	13	1	2	55	13

*Multiple response options possible. Percentages may not add to 100%.

behaviors. Most CHWs across the six sampled districts (71%) reported updating the community profile in the last three months, although it is unclear if all households were visited or if the profile was updated more on an ad hoc basis (i.e., as CHWs received word that a woman was pregnant, etc.).

When asked where they commonly provide services, the vast majority of national CHWs indicated that they provided services in the community member's home (86%), followed by their own home (66%) and at the health facility (35%). Just over 10% of CHWs indicated that they provided services in "other" locations, including community locations, such as the community *barray* or the chief's compound.

In most cases, TBAs and TB and HIV CHWs reported providing a distinct set of services from national CHWs. Nearly all TBAs (90%) reported accompanying pregnant women to the facility, followed by education and sensitization on topics related to malaria prevention (84%), maternal health (83%), and environmental sanitation (70%) (Tables 8-10). Less than half the TBAs (47%) reported providing SP to pregnant women as part of IPTp. TBAs worked, on average, approximately 4.5 days each week and around five hours per day and reported providing services equally at the health facility and in the homes of community members (70%), followed by their own home (58%).

TB CHWs reported their main duties as providing education/sensitization around TB/HIV to community members (89%), identifying and referring presumed TB cases to the health facility (89%), following up on patients receiving DOTS for TB and conducting TB contact tracing (81%). Slightly fewer reported tracing TB defaulters (71%) and linking communities to DOTS facilities (67%), and less than half (42%) reported attending monthly meetings as part of their duties. TB CHWs reported working, on average, 4.3 days per week and around 5.1 hours per day. Nearly all TB CHWs (96%) reported providing services in the community member's home, followed by the health facility (38%) and their own home (35%). Other locations where TB CHWs provide services included locations in the community where sensitization and education activities took place.

HIV CHWs reported HIV contact tracing (88%), ART defaulter tracing (83%), and referral to health facilities (83%) as the main services they provided. Counseling of HIV clients was the main "other" service reported by HIV CHWs. HIV CHWs reported working, on average, 3.9 days per week and 4.3 hours per day and provided services most commonly at the community member's home (79%), followed by their own home (54%) and the health facility (50%). Other locations where HIV CHWs reported providing services included more "private" locations that the clients selected.

Table 8: TBA Type and Quantity of Services

	TBA N=57	
	n	%
Services Provided*		
Administer SP for IPTp to pregnant women	27	47
Malaria prevention sensitization activities	48	84
Accompany pregnant women to the health facility	51	90
Environmental sanitation sensitization activities	40	70
Maternal health/Pregnancy sensitization activities	47	83
Other	11	19
Avg # Days per week worked	4.5	
Location where services provided*		
Health facility	40	70
CHW's home	33	58
Community Member's home	40	70
Other location	4	7

*Multiple response options possible. Percentages may not add to 100%.

Table 9: HIV CHW: Type and Quantity of Services

	HIV CHW N=24	
	n	%
Services Provided*		
HIV contact tracing	21	88
ART defaulter tracing	20	83
Referral to health facilities	20	83
Other	9	38
Avg # Days per week worked	3.9	
Location where services provided*		
Health facility	12	50
CHW's home	13	54
Community Member's home	19	79
Other location	5	21

*Multiple response options possible. Percentages may not add to 100%.

Table 10: TB CHW: Type and Quantity of Services

	TB CHW N=89	
	n	%
Services Provided*		
TB/HIV community sensitization	79	89
Identification and referral of presumed TB cases	79	89
Follow up on patients who are on treatment	78	88
Tracing TB treatment defaulters	63	71
TB contact tracing	72	81
Link communities to DOT facilities	60	67
Attend monthly meetings with facility in-charges	37	42
Other TB-related services	11	12
Avg # Days per week worked	4.3	
Location where services provided*		
Health facility	34	38
CHW's home	31	35
Community Member's home	85	96
Other location	14	16

*Multiple response options possible. Percentages may not add to 100%.

The survey team interviewed households that had received a visit by a TBA, national CHW, or TB CHW in the previous month to elicit feedback on the most recent visit. These interviews provided information about services received and referrals (HIV excluded). However, due to the small sample sizes for TBAs and TB CHWs, the results should be interpreted with caution. The best estimates for services provided should come from the registers held by each CHW cadre type, but the limitations with these registers have been noted earlier in the report.

Referrals are an important service provided by all cadres of CHW in Sierra Leone to ensure that clients needing a higher level of care are treated. TBAs are tasked with referring pregnant women to the facility for ANC. Twelve of the 15 households that received services from a TBA in the previous month reported referral to a health facility, and all 12 of the households reported following the referral to a health facility, although this could not be confirmed using health facility records (Table 11).

Table 11: Household Report of Referral by Cadre and Service

	TBA		National CHW				TB CHW	
			Sick child visits		Well child visits			
	n	%	n	%	n	%	n	%
Child or respondent referred to health facility by community health worker	12	80	67	85	32	52	13	77
Child or respondent followed referral to health facility	12	100	65	97	27	84	13	100

TB CHWs are trained to track and refer potential TB contacts for testing and defaulters as well as referring severely ill TB patients. Of the 17 households that received services from a TB CHW in the previous month, 13 reported referral to a health facility and all 13 reported following the referral. Finally, referrals are also an important tool for national CHWs in the management of both sick children (those with signs of severe illness) and during PNC visits (for newborn or maternal danger signs.) However, an overreliance on referrals may also indicate that national CHWs do not have the necessary skills or confidence in their skills or commodities on hand to manage uncomplicated cases, which we will explore further in the next section. Among households that received a visit for a child under 5 with a fever in the month preceding the survey, nearly 85% of caregivers reported that they were referred by a national CHW to a health facility for additional care. Nearly all (97%) of those who were referred by the CHW reported following the referral. Among households receiving a PNC visit in the month preceding the survey, just over half (52%) were referred to the health facility. Among those referred, 84% reported following through with the referral.

There is no set standard for the proportion of children with illnesses that should be referred by community-level providers because it depends largely on the context and illness epidemiology. However, evidence from other countries shows that the proportion of children referred to health facilities by national CHWs in Sierra Leone is much higher than in other countries. One study from Oromia region of Ethiopia indicated that approximately 25% of children seen by the CHWs needed to be referred for severe illness and other illnesses that required referral (anemia or acute ear infections [Miller et al 2014]). Another study from Malawi indicated that approximately one-third of sick children seen by

community-level providers presented with danger signs or other problems that required referral (Gilroy et al. 2012).

Some national-level stakeholders were not as surprised by the high level of referrals. They were of the view that the more serious cases should be handled by the PHU and clients should not go to the CHW for treatment, However, there were no data on the seriousness of the cases, distance from the PHU, availability of drugs, and reason for referral to determine whether it was a genuine case that demanded referral or was a case of poor service provision. Findings and interpretations in the "Quality of Care" section based on case scenarios also address the issue of high levels of referrals by national CHWs.

Health Systems to Support Quality CHW Services

For any health system to function properly, supportive elements must be in place to ensure quality care. In this section, we examine some of these elements and discuss them in the context of the CHW program in Sierra Leone. Human resources encompasses a variety of aspects including selection and targeting of CHWs, criteria for recruitment, training of CHWs, and retention.

Selection and Recruitment

Recruitment criteria for national CHWs as well as the proposed criteria for integrated TB/HIV CHWs are outlined explicitly in the program strategy and policy documents. The national CHW policy also notes that "when all things are equal, preference will be given to women, especially those who have worked with pregnant and new mothers." Additionally, it states that while literacy and basic numeracy are valued and preferable, at this time, they are not required. As noted earlier, literacy among national CHWs ranged from 70% in Bo to 96% in Moyamba, and women made up a variable proportion of the workforce based on district, ranging from 18% in Moyamba to 63% in WAU.

Figure 13: National CHW Requirements

- Completed Basic Education Certificate Exam (BECE) level
- Exemplary, honest, trustworthy, and respected
- Literate and possess basic numeracy (addition and subtraction)
- Willing, able, and motivated to serve his/her community and dedicated to caring and supporting TB and HIV patients, family members and the community at large
- A permanent resident of the community and willing to work in it
- Able to perform tasks in the SOW
- Interested in community health and development
- A good mobilizer and communicator
- Involved in community projects in the past
- At least 18 years old
- Accepted by the community

The criteria for HIV and TB CHWs are also explicitly stated in the new integrated TB/HIV policy and are summarized in Figure 14. The education and literacy/numeracy requirements for these CHWs are higher, which was captured in the survey indicating that nearly all TB CHWs (94%) and HIV CHWs (96%) were literate. Additionally, most TB and HIV CHWS met the education requirements, with 88% of TB CHWs and 92% of HIV CHWs completing at least junior secondary school. While the policy does not give preference to either sex for CHW positions, it should be noted that a vast majority (70%) of TB CHWs across the six districts were male, and 79% of HIV CHWs from the two districts sampled were female.

Figure 14: TB and HIV CHW Requirements

- Completed Basic Education Certificate Exam (BECE) level
- Exemplary, honest, trustworthy, and respected
- Literate and possess basic numeracy (addition and subtraction)
- Willing, able, and motivated to serve his/her community and dedicated to caring and supporting TB and HIV patients, family members and the community at large
- A permanent resident of the community and willing to work in it
- Able to perform tasks in the SOW
- Interested in community health and development
- A good mobilizer and communicator
- Involved in community projects in the past
- At least 18 years old
- Accepted by the community

The selection criteria for TBAs are not explicitly stated in any program policy documents. As such, we cannot compare policy and practice. However, recruitment of all cadres of CHWs relied on community input to ensure that there was buy-in from the local community. National-level stakeholders reported that many were CHWs from earlier years who were recruited into the program once again. As a result, the CHW program faced the challenges of literacy, etc. The malaria TBA program evolved after TBAs were prohibited from attending home births, and, instead, their skills and role in the community were leveraged by the national government to provide ANC (specifically related to malaria prevention) to pregnant women in their communities. As a result, very few TBAs were literate (19%), and most had not received any kind of formal education (77%). Employment of a low literacy cadre has important effects on the quality of care provided. PHU in-charges (who supervise TBAs and summarize their data) as well as DHMT staff noted that low literacy among this cadre was a barrier to accurate data collection and reporting. However, TBAs are generally older respected women from the communities who have long played an important role in pregnancy and delivery in their communities. Their reputation and relationship with pregnant women are one of the most important qualifications for this cadre.

Training

Training is an important determinant of the quality of services provided by CHWs, as well as a nonfinancial motivator. Training should include a comprehensive introductory training as well as regular refresher trainings to ensure the CHWs' skill sets are maintained and that they are up to date with changes, including national treatment guidelines and other policy changes. Studies indicate that regular refresher training is as important as the initial training received by CHWs (Lehman and Sanders, 2007).

The preservice training for national CHWs was conducted in two stages over the course of one year from March 2017 to March 2018. It included three weeks of classroom-based work covering community health basics (roles and responsibilities of CHWs, household listings, preventive treatment of illness, screening for malnutrition, etc.). According to reports from interviews conducted, the CHW training focused on several key areas, including effective communication skills and body language, identification of danger signs and sick individuals, malaria treatment, and advocacy of health care services in the community, particularly for children under 5, pregnant and lactating women, and Ebola survivors.

First, a national-level training of trainers (TOT) was held with master trainers. This training was provided with financial and technical support from UNICEF and USAID, and also involved several organizations such as JSI, Save the Children, and Goal. The master trainers trained district trainers. The second level of training was conducted by district trainers to all CHWs in each district.

Training included four modules, three for CHWs and an additional module for PS. The classroom portion of training was followed by two weeks of "community training and supervision" for each of the three classroom training modules, for a total of approximately nine to 10 weeks of training. Interviews with national CHW program staff indicated that most CHWs received this training; however, in a few select cases, for example in Pujehun, the last module of training was to be conducted in September 2019, as all modules were not initially completed. Additionally, new CHWs that joined since the initial preservice training have not received the full training, but have been provided, instead, with on-the-job training. While there is some attrition and new recruitment of CHWs on a regular basis, no additional preservice training was provided, but a system of on-the-job training and mentoring is followed.

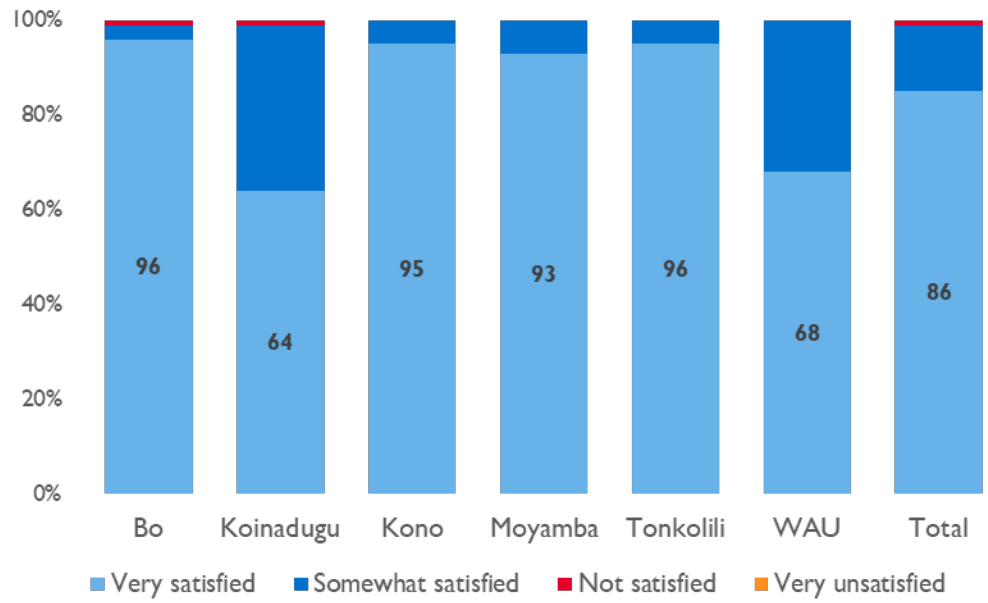
For national CHWs, program leadership noted that no formal refresher training has taken place. The common system is to receive on-the-job training and mentoring. A refresher training is planned for 2020 under the next Global Fund grant. However, when asked about refresher training, many CHWs noted that they occasionally received training both at monthly meetings and outside of monthly meetings. Discussions at the national level did note that no refresher training had been conducted. However, approximately 42% of national CHWs reported ever receiving a refresher training outside of the monthly meetings, ranging from 25% in Moyamba to 80% in Kono, which may indicate that these trainings are dependent on the IP in the region. Among national CHWs who had received refresher training, the content of the last refresher varied widely, including but not limited to training on how and when to refer sick patients and pregnant women, management of sick children under 5, environmental sanitation. and how to engage and educate communities on a variety of topics.

In 2018, the MOHS trained PS on community-based surveillance, malnutrition and iCCM treatment as well as the use of reporting registers, specifically the RMNCH tool to record the number of pregnant

women visited in the community and any who had died during pregnancy. Similar to CHWs, PS reported being trained on effective communication skills and body language, identification of danger signs and sick individuals, treatment of malaria, and the promotion of health care services in the community. They were also trained to identify barriers to health care in the community and when and how to make referrals. They noted in interviews that trainings had been provided by IPs and other organizations, such as like GOAL on topics like mental health, but did not provide additional information about how comprehensive the training had been or who had been included.

Despite the lack of consistency in refresher training and a desire for more refresher training expressed by stakeholders at all levels, overall most CHWs were satisfied with the training they had received. Eighty-six percent of national CHWs were very satisfied with the training they had received, ranging from 64% in Koinadugu to 96% in Bo. Figure 15 presents information on CHW satisfaction with training in each of the six districts. The vast majority of CHW respondents felt that they needed supplemental training to improve their skills and performance as well as support with documentation and reporting, even though they did receive support from the PS. Every month, the PS assessed CHWs' work, including the number of households visited and referrals made.

Figure 15: Satisfaction of National CHWs with Training Received by District



According to respondents interviewed, training for malaria TBAs was provided in May/June 2018. The HIV program also offered training at two levels – a TOT followed by rollout of training in each district supported by PIH. The TB CHWs also received training similarly in two stages, with training ending in June 2018.

Motivation

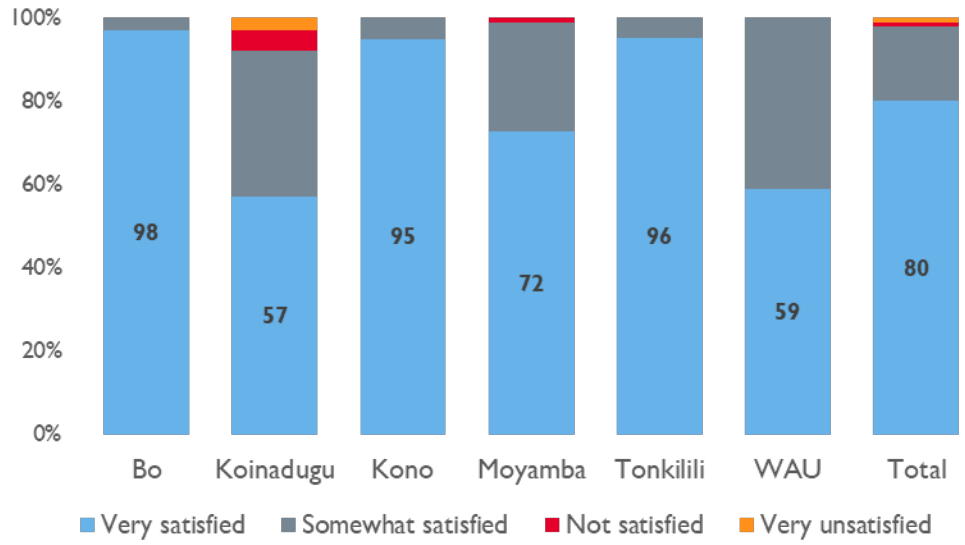
Financial incentives are an important motivator of CHWs, and the national policy states stipends be provided to all cadres of CHWs working in Sierra Leone. Stakeholders at all levels indicated that these

incentives are often not paid on time or in full. The survey administered to national CHWs asked if they had been paid in the last quarter. Across the six districts, nearly half of CHWs said they had been paid in the last quarter and in full; however, qualitative interview findings suggest that the CHWs had only been paid in the last quarter for their work through December 2018 (i.e., paid in the last quarter, but not for the last quarter) (Table 25 in Appendix). Payment also varied by district; only 11% of national CHWs in Bo reported that they had not received any incentive or stipend in the last quarter compared to 56% of national CHWs in Kono. Despite lack of complete or on-time payment, nearly all national CHWs reported continuing to provide services at the community level.

Complete payment of incentives and stipends to other cadres varied by cadre (see Table 26 in Appendix). Most of the HIV CHWs in the two districts sampled (92%) reported that they were paid in the last quarter, either partially or in full. However, the situation for TB CHWs and TBAs was quite different. Nearly 41% of TB CHWs reported that they did not receive any incentive or stipend in the last quarter, and 83% of TBAs noted that they had not been paid in the last quarter. Despite late or incomplete incentives and stipends, most TB CHWs and TBAs still reported providing services. Stakeholders at all levels and CHWs from all cadres noted in interviews that late and incomplete payment is a major challenge they face. Discussions with national-level stakeholders indicated that all payments of incentives are made through mobile payments, and the reasons for the delay in payment included the need for verification of CHWs and, especially in the case of malaria TBAs, expired sim cards.

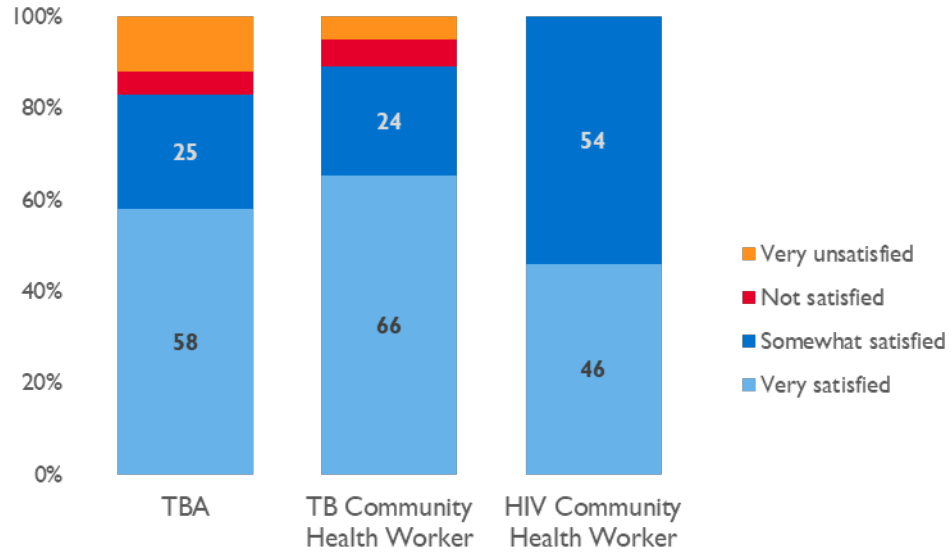
Satisfaction of CHWs in their role is key to retention of the workforce. Figure 16 summarizes national CHW satisfaction with their role by district. Overall, 80% of CHWs were very satisfied with their role, ranging from 57% in Koinadugu to 98% in Bo. National CHWs cited knowledge about health, respect among their peers and the community, and the feeling that their work improves the health of the community as benefits or advantages of their work (Table 27 in Appendix). Where CHWs are more regularly paid, like Bo, CHWs reported that the incentive and stipend are important benefits of their work. Alternatively, in districts like Koinadugu, national CHWs reported the lack of timely and complete incentives as a challenge to their work. Across the six districts, the greatest challenge described by national CHWs was an irregular supply of medicines and other commodities (noted by 61% of all national CHWs), followed by late or incomplete payments of incentives and stipends (55%) and a heavy workload (43%).

Figure 16: National CHW Satisfaction with Role by District



Overall, a smaller proportion of TBAs and TB and HIV CHWs reported being very satisfied with their role as community health workers (Figure 17). Benefits largely correspond with those mentioned by national CHWs; however, challenges differ slightly for TB and HIV CHWs. TB and HIV CHWs noted that tracing patients and contacts can be difficult due to incorrect addresses and lack of cooperation on the part of clients (particularly for TB CHWs).

Figure 17: TBA and TB, HIV CHW Satisfaction with Role



Supplies and Equipment

An appropriate supply of medicines and equipment is key to ensure that CHWs of any type are able to perform their duties. In order to determine the availability of essential medicines and equipment, the team conducted a material audit in a small subsample (N=59) of national CHWs in all six districts, involving visits to their homes to observe their stock on hand of various supplies. Table 12 presents the availability of different drugs and supplies that are outlined in the national CHW policy on the day of the visit. Few national CHWs had any essential drugs for iCCM available on the day of the visit. Only 36% of CHWs had ACTs, zinc (20%), ORS (15%), and amoxicillin (9%). A majority (63%) of national CHWs did not have **any** essential iCCM drugs in stock on the day of the visit and only 7% had all of the essential iCCM drugs in stock. The national policy indicates that CHWs should also have stocks of family planning commodities. Only 3% of CHW had oral contraceptive pills in stock on the day of the visit, and 10% had male condoms. In terms of diagnostic consumables, fewer than half (41%) of all CHWs had malaria RDTs in stock on the day of the visit. These findings are not aligned with the view of national-level program managers and stakeholders that ORS, zinc, and amoxicillin are typically in stock and available at health facilities and at the community level. However, they also felt that amoxicillin was highly prescribed, which could be the reason for the limited stock availability. This calls for greater coordination between the health facility and the community level with better guidelines for rational prescription of medication.

Table 12: Essential Supplies and Commodities from Material Audit – National CHW

	Available on day of visit	
	n	%
Drugs (observed)		
ACT (25, 50 or 100)	21	36
Zinc	12	20
ORS	9	15
Amoxicillin	5	9
All essential ICCM drugs*	4	7
None of the essential ICCM drugs*	37	63
Cotrimox	1	2
Oral contraceptive pills	2	3
Male condoms	6	10
Other Supplies/Commodities (observed)		
Malaria RDTs	24	41
Watch/ARI timing device	39	66
MUAC strap	44	75
Job aids	52	88
ICCM register	48	81
Household register	46	78
RMNCH register	50	85
Referral tickets	46	78
Gloves	15	25
Medicine Box	33	56
Sharps container	13	22
*ACT, Zinc, ORS and Amoxicillin.		

The material audit also captured other commodities outlined in the national CHW policy. While many of these reusable commodities were more available than medicines, availability of all supplies was not universal. For example, only 66% of CHWs had a watch or timing device provided by the program for counting respiratory rates in order to diagnose pneumonia, and 75% had a middle-upper arm circumference (MUAC) strap for assessing nutritional status. Registers and job aids were more readily available, but many CHWs reported they did not fill them out regularly because they were not regularly treating any illnesses due to drug stock-outs. Personal protective equipment, like gloves and sharps boxes, were also not readily available among most CHWs.

TBAs and TB and HIV CHWs were asked about the availability of various supplies during the CHW survey. Table 13 summarizes their responses. TBAs should have a stock of medication on hand, as they provide SP and iron folate to pregnant women. Less than 25% of TBAs reported having any stock of SP or iron folate on hand on the day of the survey. In addition to administering these drugs to pregnant

women, TBAs are also expected to educate pregnant women on healthy behaviors during pregnancy. Sixty-one percent of TBAs reported owning the pictorial fact sheets used for these sensitization activities. Fewer TBAs (53%) reported having the CHW/TBA registers available.

With the exception of bicycles, most TB CHWs reported having the essential equipment listed in the TB policy. In other discussions with NLTCP, officials reported delays in assembling bicycles and their distribution. Comparatively, few HIV CHWs reported having supplies like job aids (46%), referral tickets (38%), and treatment calendars (13%).

Table 13: Essential Supplies and Commodities from CHW Survey- TBAs and TB, HIV CHWs

	n	%
TBAs (N=57)		
Commodities received from program (reported)		
CHW/TBA registers	30	53
Job aids (pictorial fact sheet)	35	61
Drugs currently in stock (reported or observed on stock card)		
SP for IPT	13	23
Iron Folate	11	19
Neither SP nor Iron Folate	39	68
TB CHW (N=89)		
Bicycle	23	26
Backpack	77	87
Rainboots/Raincoat	83	93
Job aids	64	72
Treatment calendar	82	91
Referral tickets	86	97
HIV CHW (N=24)		
Job aids	11	46
Treatment calendar	3	13
Referral tickets	9	38

The consequences of the lack of supplies and medicines are clear. Without medicines and supplies, national CHWs cannot perform an essential component of their job, which is to diagnose and manage illness. As McGorman et al. 2012 note *"[...] there is no program without a product,"* and this is true for the CHW program in Sierra Leone and has been documented in other countries, like Burkina Faso (McGorman et al. 2012; Munos et al. 2016). If CHWs are expected to fulfill this key component of their job, identified in the national CHW policy SOW, adequate supply of diagnostic and treatment commodities is essential.

In Sierra Leone, commodities were described as very important to CHW's identity and role in their community. CHWs wanted to be seen as care providers. If they were not able to offer medicines or

provide a test to clients, their perception was that they were not "providing care." Although community surveillance, wellness visits, and overall health prevention are key activities under the CHWs' portfolio, CHWs provided more emphasis on their role in treatment, as a result of which the nonavailability of drugs is a challenge. TB and HIV CHWs are more engaged in counseling, tracing, and prevention activities and do not offer treatment services; therefore, they do not face the same challenges with availability of drugs.

***"... A big challenge is drugs - many aren't working because they don't have drugs"* – DHMT**

***"Am not finding anything difficult only the lack of drugs within our community and health facility."* – CHW Kono district**

Additionally, job aids are essential to sensitization activities performed by all cadres. While job aids were available to some cadres, they were not widely available to all.

Key Findings

- Most CHWs that are expected to have stock of drugs (national CHWs and TBAs) did not have stock on hand.
- National and TB CHWs had most of the equipment and job aids, but many TBAs and HIV CHWs lacked these supplies.

Supervision and Support

Supervision, support, and mentorship of CHWs are essential elements of CHW programs to ensure quality of services. Supervisory visits are an opportunity for the CHW to have their work observed by supervisors and receive feedback and on-the-job training. Work with supervisors also provides an essential link between CHWs and higher levels of the health system. Sierra Leone's national CHW policy indicates that PS should observe CHWs in their catchment areas at least twice per month. The training materials for PS indicate that supervisory visits should include case review (a revisiting of cases seen by CHWs to ensure they were correctly managed and identify areas for improvement), direct observation, performance audit, feedback, and action planning.

Supervision is provided at different levels. Almost all the CHWs discussed monthly meetings with the PS, during which they reviewed their registers and planned for upcoming activities. In addition to direct supervision of CHWs by the PS, supervision also takes place at the PHU, chiefdom, and DHMT levels. The national CHW Hub has regional coordinators and other staff who engage in supervision on a quarterly basis. In some districts such as Kono, the IPs also have a mandate of providing technical support and supervision of the national CHW program in their assigned district. For the TB, HIV, and malaria CHW/TBA programs as well, supervision is built into the system. While supervision checklists exist and are used, it is not clear that they are consistently used.

Table 14 summarizes the findings from the national CHW survey related to supervision visits. Across the six districts sampled, a large majority (87%) of national CHWs reported receiving a supervisory visit in the month before the survey, ranging from 71% in Moyamba to nearly all (96%) of CHWs in Kono. More than half (52%) of CHWs in the six districts reported receiving three or more supervisory visits in the last quarter, with a median of three visits, which equals approximately one visit per month. The median number of supervisory visits in the last quarter varied from two in Moyamba, Tonkolili, and WAU to five in Koinadugu.

The most common activity during supervisory visits noted by CHWs was a review of their records and reports by PS (90%), followed by observation of the CHW's work (73%), and discussions of problems encountered by the CHW and/or questions answered (60%). CHWs in Kono reported that supervisory visits included most of the key components outlined in the national policy, with the exception of delivery of supplies. Alternatively, WAU CHWs reported fewer of the key elements of supervision taking place. For example, when asked about the activities that took place at their last supervisory visit, 84% of CHWs in Kono report that their supervisor used a supervisory checklist, compared with 16% in WAU.

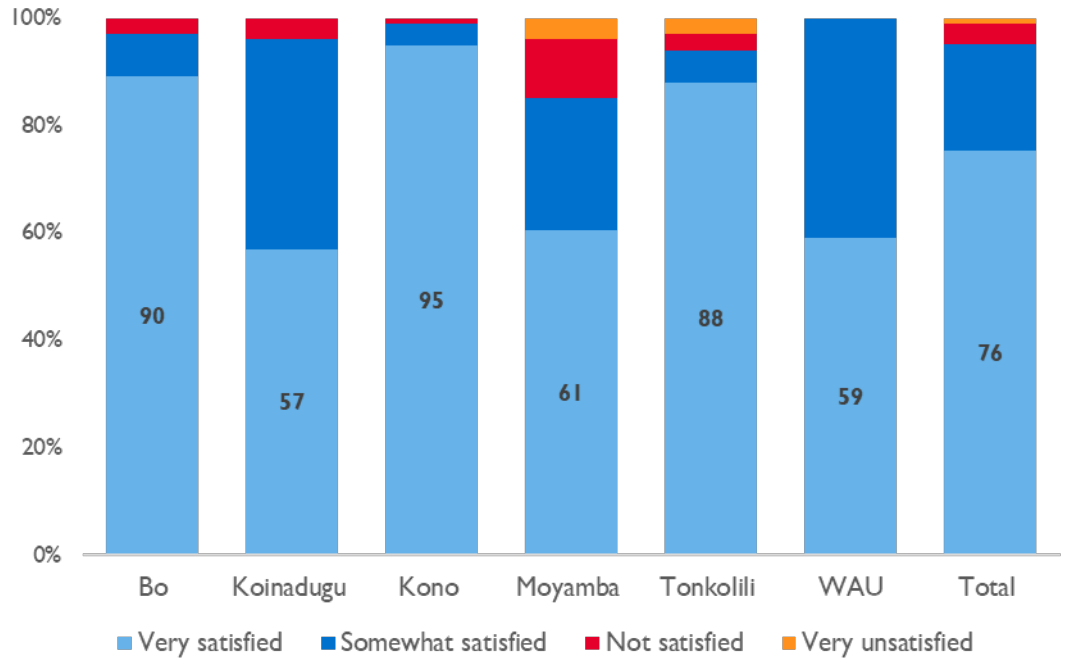
Table 14: Supervision – National CHWs

	Bo N=80		Koinadugu N=75		Kono N=75		Moyamba N=76		Tonkolili N=67		Western Area Urban (WAU) N=56		Total N=429	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Received a Supervisory Visit in the last month														
No	9	11	6	8	1	1	9	12	4	6	8	14	37	9
Yes	71	89	67	89	73	97	54	71	63	94	43	77	371	87
Never had a supervisory visit	0	0	2	3	1	1	13	17	0	0	5	9	21	5
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Number of Supervisory Visits in the Last Quarter														
0	0	0	2	3	1	1	19	25	2	3	6	11	30	7
1	8	10	3	4	6	8	6	8	15	22	10	18	48	11
2	17	21	8	11	13	17	32	42	32	48	16	29	118	28
3	29	36	14	19	51	68	11	15	16	24	14	25	135	32
4 or more	23	29	42	56	4	5	6	8	2	3	10	18	87	20
Don't Know	3	4	6	8	0	0	2	3	0	0	0	0	11	3
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Median Number of Visits in the Last Quarter														
	3		5		3		2		2		2		3	
Activities at last supervisory visit (among CHWs ever receiving a supervisory visit)* (N=408)														
Supervisor delivered supplies	12	15	8	11	32	43	9	14	1	2	2	4	64	16
Supervisor checked records/reports	66	83	71	97	74	100	54	86	64	96	37	73	366	90
Supervisor observed CHW's work	43	54	54	74	74	100	43	68	45	67	39	77	298	73
Supervisor used a supervision checklist	17	21	24	33	62	84	29	46	39	58	8	16	179	44
Supervisor re-visited a household where the CHW had provided services	51	64	37	51	62	84	15	24	14	21	14	28	193	47
Supervisor provided feedback on CHW performance	51	64	31	43	61	82	20	32	29	43	19	37	211	52
Supervisor provided updates on admin or technical issues related to CHW's work	19	24	14	19	52	70	9	14	9	13	2	4	105	26
Supervisor discussed problems encountered by CHW and/or answered questions	46	58	38	52	68	92	25	40	37	55	30	59	244	60
Supervisor developed an action plan to help improve CHW's performance	19	24	12	16	51	69	8	13	6	9	4	8	100	25

*Multiple response options possible. Percentages may not add to 100%.

As Figure 18 indicates, overall, according to the survey, national CHWs were largely satisfied with the supervision and support they received, with approximately three-quarters reporting that they were very satisfied, ranging from 57% in Koinadugu to 95% in Kono.

Figure 18: National CHW Satisfaction with Supervision by District



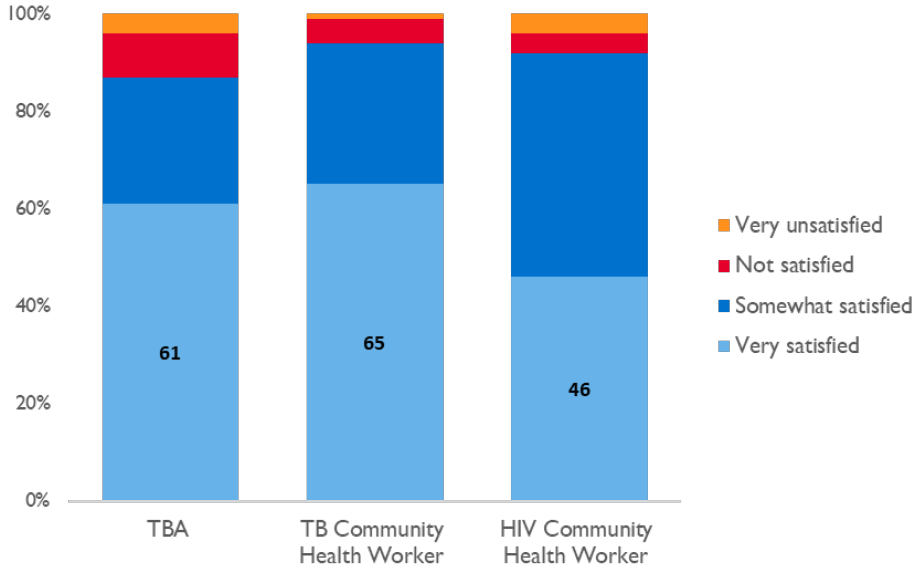
The guidelines for supervision of other cadres of CHWs are less prescribed and formal than those for the national CHWs and not included in any documentation made available to the assessment team. A malaria TBA program official indicated that the PHU in-charge supervises TBAs and that supervision can take place in a number of ways, including during monthly in-charge meetings at the facility and during facility "outreach" visits to TBAs. The official noted that supervision should take place approximately once a month, as well as on as needed basis. Topics covered by TBA supervisors include proper recording of data in registers and review of the package of services provided by TBAs.

Most TBAs (91%) reported receiving at least one supervisory visit in the month preceding the survey. TBAs reported a median of three supervisory visits in the last year, indicating that supervision is not regular. When asked about the activities that take place during supervision visits, most TBAs noted that supervisors commonly provided feedback on their performance (74%), discussed problems encountered by the TBA and/or answered questions (67%), held mentorship meetings (59%), or checked their records and registers (56%). Program officials noted that review meetings are expected to take place on a monthly basis; however, only 65% of TBAs noted they had ever attended a review meeting and only 37% said they occurred on a monthly basis. Program officials attributed the poor attendance of TBAs at monthly meetings to a lack of transport, and lack of payment, but TBAs noted that they did not attend because they did not know when meetings occurred.

The system of supervision used for TB CHWs varies from that used by TBAs and national CHWs. Program staff noted that supervision takes place on a monthly and quarterly basis by national TB staff. TB CHWs also reported receiving supervisory visits from PS and PHU in-charges. These visits may be informal on-the-job training that takes place versus more structured supervision visits, but 81% of TB CHWs reported receiving supervision in the last month. Most TB CHWs reported that supervision consisted of the supervisor checking their reports and records (84%), observing their work (79%), and providing feedback on their performance (61%). Review meetings, another opportunity for supportive supervision and information dissemination, are not held for TB CHWs, according to TB program staff. However, a CHW from each DOTS facility attends a district-level review meeting on a quarterly basis. The new integrated TB/HIV strategy notes that periodic review meetings will be organized by the TB and HIV district focal persons or facility in-charges and will be held for the CHWs once the program is in place.

HIV program officials noted that supervision of HIV CHWs is irregular and performed on an ad hoc basis. Despite this, most (79%) HIV CHWs noted that they had received some type of supervision in the month preceding the survey. It is unclear if these visits were structured or in their communities or if they included any interactions with their peer supervisors at the health facility, where they are expected to report regularly. Like TB CHWs, HIV CHWs noted that supervision included review of reports and records (71%) and observation of their work (75%), as well as discussion of problems or questions asked by the CHW (83%). Satisfaction with supervision varied by cadre. Most CHWs were either very satisfied or somewhat satisfied with the supervision they received (Figure 19).

Figure 19: CHW Satisfaction with Supervision by Cadre



Key Findings

- Supervision took place on a regular basis for national CHWs, although it may be in a more informal manner (i.e., troubleshooting, feedback, and observation versus more formal performance audits, checklists, and action planning). Review meetings also took place regularly.
- National CHWs were largely satisfied with the support they receive.
- Supervision for the other cadres was much more informal and ad hoc. Review meetings, where they occurred, did not occur regularly or were not well attended by CHWs.

Quality of Services

This section presents results of the section of the survey that focused on the skills of national CHWs needed to provide quality care. In lieu of direct observation of CHWs provision of care and clinical reexamination, the gold standard in determining service quality, the assessment team presented case scenarios of uncomplicated and severe child illnesses (fever, diarrhea, and pneumonia) to national CHWs and asked how they would manage the cases. CHWs were presented with the World Health Organization's standard Integrated Management of Childhood Illness training scenarios adapted slightly for local context and asked to explain how they would manage the child, including all actions and/or prescriptions they would provide to the child for the most appropriate treatment. Survey administrators told CHWs to assume that all needed drugs were in stock in their drug box and that a referral facility was available 20 minutes away. The case scenarios consisted of two video scenarios and six narrative scenarios that the CHW read from the tablet or the survey administrator read aloud to the CHW, based on their preference. The CHWs were given as much time as they needed to complete each exercise.

Table 15 presents the results of the case scenarios and is broken down by the management of mild illness (those not presenting with danger signs that CHWs should be able to manage without referral) and severe illness (those presenting with danger signs that require a referral to a health facility).

Uncomplicated diarrhea: In Sierra Leone, iCCM guidelines indicate that children ages 2 to 59 months presenting with uncomplicated diarrhea (without danger signs, blood in the stool, dehydration, and lasting less than 14 days) should be given {1) ORS immediately until the child is no longer thirsty, (2) ORS sachets to take home for the caregiver to administer, and (3) zinc tablets for 10 days. For management of uncomplicated diarrhea, across all six districts, just over half of CHWs responded that a child with signs of uncomplicated diarrhea should be given ORS (either during the visit until no longer thirsty or to take home). Responses varied by district with 24% of CHWs in Koinadugu indicating that the CHW should give the child ORS to 69% in Tonkolili. Zinc was even less widely reported by CHWs for diarrhea management across the six districts, reported by 40% of CHWs overall, ranging from 12% of CHWs in Koinadugu to 79% of CHWs in Tonkolili. While referral was not indicated by the case scenario according to the iCCM algorithm, a large proportion (68%) of CHWs across the six districts noted that they would either write a referral note or assist the caregiver with a referral to a health facility. The decision to refer varied widely across the districts ranging from 24% of CHWs in Tonkolili to 89% of CHWs in WAU.

Uncomplicated malaria: For uncomplicated fever/malaria, iCCM guidelines in Sierra Leone indicate that a RDT should first be administered to diagnose suspected malaria. If the RDT is positive for malaria,

the guidelines indicate that ACT should be given for 3 days. Approximately 37% of all CHWs responded that they would administer an RDT to the child presenting with fever in the case scenario, ranging from 5% in Koinadugu to 55% in Kono. A slightly smaller proportion (30%) of CHWs noted that they would treat an RDT-positive case with ACT, ranging from 7% in Koinadugu to 49% in Kono. As noted above with uncomplicated diarrhea, iCCM does not indicate referral to a health facility in cases of uncomplicated malaria (i.e., when no danger signs are present and the fever duration is less than 7 days). However, nearly three-quarters (72%) of CHWs reported that they would refer this case to a health facility, and responses varied widely by district. Just 24% of CHWs in Tonkolili reported that they would either write a referral note or assist the caregiver with a referral to a health facility for the case, compared with 92% of CHWS in Koinadugu.

Uncomplicated pneumonia: Diagnosis and management of uncomplicated pneumonia (cough for fewer than 21 days or fast breathing without chest in-drawing or other danger signs) requires that a CHW measure the child's respiratory rate and, in the event that the respiratory rate exceeds certain standards set for different ages, provide treatment with amoxicillin dispersible tabs. A video case scenario was used to measure the CHW's ability to correctly assess respiratory rate. Overall, more than half (58%) of CHWs were able to correctly count (+/- 3) the number of breaths the child took in 1 minute, ranging from 13% in Tonkolili to 73% in WAU[1]. A narrative case scenario was used to determine how the CHW would manage a child presenting with uncomplicated pneumonia. Only 14% of CHWs overall reported that they would treat the child's uncomplicated pneumonia with a 5-day course of amoxicillin tabs, ranging from 6% in Bo to 30% in Tonkolili. Alternatively, most CHWs (88%) noted that they would refer such cases to the health facility for management, ranging from nearly all CHWs in Bo (99%) to 72% of CHWs in Kono.

One video case scenario included a child with severe acute malnutrition (SAM) and required the CHWs to identify the MUAC strap, explain its purpose and discuss the management of SAM. Nearly all CHWs (99%) correctly identified the MUAC strap shown in the video, and approximately 84% of CHWs correctly explained that the purpose of the MUAC strap was to screen for malnutrition, assess nutritional status, identify a danger sign or check for proper growth. Nearly all (97%) of CHWs reported that they would refer cases of SAM to a health facility.

Management of severe illness (diarrhea, fever, cough, or fast breathing accompanied by any danger signs) requires CHWs to refer cases to health facilities for management. According to iCCM guidelines, referral should include a written referral note, and the CHW should assist the caregiver with the referral to the facility. Across the three case scenarios that presented children with severe illness (diarrhea, pneumonia and SAM), a majority of CHWs noted that they would refer the cases, most writing a referral note and a smaller proportion assisting the caregiver with the referral. However, due to the high proportion of CHWs that referred for uncomplicated illnesses, it is unclear if the CHWs are able to properly identify danger signs and distinguish between uncomplicated and severe illness.

[1] The low percentage of 13% is hard to explain in Tonkolili, a district where CHWs were relatively good about treating uncomplicated illness correctly compared to the other districts.

The consequences of overreferral of uncomplicated illness and inability to recognize danger signs are important to consider. Overreferral of uncomplicated cases and inability to identify danger signs can jeopardize the community's confidence in the services provided by CHWs and cause them to stop utilizing CHWs altogether. In some cases, this may mean that community members bypass the CHWs and go straight to health facilities, but in other cases it may mean delaying or not seeking treatment completely.

Key Findings

- Case scenarios indicate a high reliance on referral, even for uncomplicated illness, indicating that knowledge of how to treat uncomplicated illness may be low.

Beneficiary Perceptions of Services: Satisfaction with services is an important indicator of beneficiary confidence in CHW services and likelihood to use their services again in the future. In a majority of cases (88% for TB beneficiaries, 87% for TBA beneficiaries, 81% for national CHWs performing a sick-child visit, and 74% for national CHWs performing a well-child visit), beneficiaries reported being very satisfied with the services received (see Table 28 in Appendix). Suggestions for improvement by beneficiaries centered largely on lack of drugs and commodities, issues noted earlier in the report. Beneficiaries also noted that they did not pay for CHW services or medication. It is possible that due to the lack of drugs at health facilities, they may have needed to purchase medicines if they were referred to the health facility.

In light of these highly favorable reviews of CHWs, it should be noted that data collectors noted in a number of cases that beneficiaries did not feel comfortable providing completely transparent feedback on the CHWs due to their status in the community. CHWs are chosen by communities and community leaders and are often highly respected members of the community, and, despite assurances of confidentiality, beneficiaries may have been hesitant to appear critical of these respected members of the community.

Table 15: Sick Child Case Management Case Scenarios – National CHWs

	Bo N=80		Koinadugu N=75		Kono N=75		Moyamba N=76		Tonkolili N=67		Western Area Urban (WAU) N=56		Total N=429	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Mild Illness - Diarrhea														
Proportion of CHWs that responded would help the caregiver to give the child ORS until child is no longer thirsty	34	43	13	17	29	39	38	50	28	42	12	21	154	36
Proportion of CHWs that would give the caregiver two or three sachets of ORS to take home	5	6	11	15	33	44	35	46	28	42	18	32	130	30
Proportion of CHWs that correctly identified zinc as treatment for uncomplicated diarrhea	17	21	9	12	43	57	38	50	53	79	13	23	173	40
Proportion of CHWs who would refer for uncomplicated diarrhea	68	85	64	85	39	52	56	74	16	24	50	89	293	68
Severe Illness* - Diarrhea														
Proportion of CHWs who would refer for severe diarrhea**	78	98	71	95	74	99	73	96	53	79	55	98	404	94
Proportion of CHWs who correctly identify assisting the caregiver with the referral to a health facility	61	76	46	61	66	88	45	59	36	54	49	88	303	71
Mild Illness - Fever/Malaria														
Proportion of CHWs that correctly identify using an RDT to diagnose fever	38	48	4	5	41	55	24	32	30	45	21	38	158	37
Proportion of CHWs that correctly identified ACT for 3 days as the treatment for uncomplicated malaria	27	34	5	7	37	49	21	28	25	37	12	21	127	30
Proportion of CHWs who would refer for uncomplicated malaria	51	64	69	92	41	55	63	83	42	63	44	79	310	72
Mild Illness - Pneumonia														
Proportion of CHWs that correctly counted (+/-3 breaths per minute) respiratory rates shown on a video case scenario	55	69	51	68	45	60	48	63	9	13	41	73	249	58
Proportion of CHWs that correctly identified Amoxicillin DT for 5 days as the treatment for fast-breathing pneumonia	5	6	8	11	8	11	13	17	20	30	6	11	60	14
Proportion of CHWs who would refer for uncomplicated pneumonia	79	99	68	91	54	72	70	92	52	78	53	95	376	88
Severe illness* - Pneumonia														
Proportion of CHWs who would refer for severe pneumonia**	80	100	69	92	73	97	71	93	60	90	54	96	407	95
Proportion of CHWs that correctly identify assisting the caregiver with the referral to a health facility	56	70	43	57	64	85	42	55	39	58	43	77	287	67
Management of SAM														
CHWs with a correct understanding of the MUAC strap purpose	72	90	58	77	75	100	49	65	51	76	54	96	359	84
Proportion of CHWs that would refer for SAM**	79	99	71	95	75	100	75	99	63	94	53	95	416	97
Proportion of CHWs that correctly identify assisting the caregiver with the referral to a health facility	51	64	51	68	65	87	43	57	39	58	32	57	281	66

*Severe Illness includes presence of danger signs, including chest-indrawing, convulsions, lethargy/very sleepy, vomits everything.

Cost-Efficiency Analysis

This section focuses on the findings of the costing and cost-efficiency analysis. These findings include calculation of the cost of the national CHW as well as TB CHW, HIV CHW, and malaria TBA programs in all 14 districts of Sierra Leone. They cover all costs incurred at the national and subnational levels as well as any IP costs. The cost-efficiency analysis focuses on the costs associated with provision of each type of service by the different cadres of CHWs.

Research Question:

- What are the costs associated with services provided by CHWs in Sierra Leone?
    - What is the total cost of the national CHW program?
    - What are the costs associated with providing each type of service—or the cost associated with providing services by each cadre of CHW?

National CHW Program

Figures 20 and 21 show the financial costs of the national CHW program by district from July 2018 to June 2019. The total annual cost was 89.64 billion Leones ($9.5 million) with medicine and 54.24 billion Leones ($5.8 million) without medicine. The largest cost component was medicines distributed (39.4%), followed by service delivery (incentives, transport) (31.1%). When medicines were excluded, the largest cost component of the program was service delivery (incentives, transport) (51.4%), followed by district-level training (18.7%).

With medicine (Figure 20), the annual costs by district range from 3.1 billion Leones ($326,766) in Bonthe to 8.6 billion ($922,224) in Kenema due to differences in number of CHWs, incentives paid, medicines distributed, and involvement of NGOs. National CHW costs were highest in Kenema district since it has the highest number of CHWs (1,209). They were also high in Kono district, which had NGO management support from IRC. Costs were lower in districts such as Bonthe, where incentives were only paid for a quarter of the year; WAU, where there were fewer CHWs because of its semi-urban location; and Moyamba district, where fewer child illnesses were treated. More detailed tables are in Tables 30-31 in the Appendix.

Figure 20. Financial Cost of National CHW Program by District with Medicines, July 2018-June 2019 (million Leones)

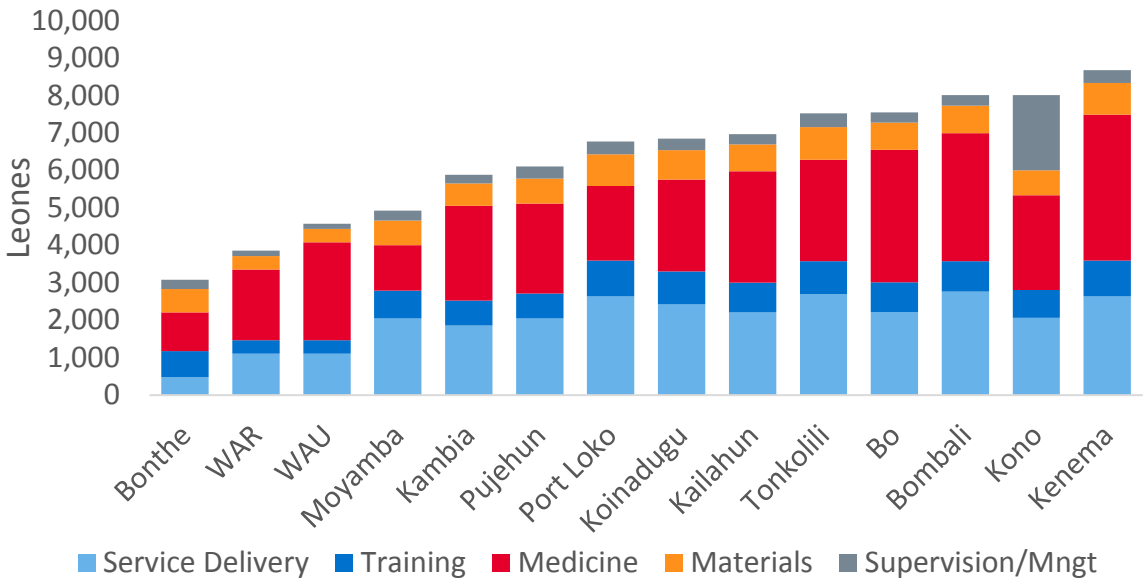
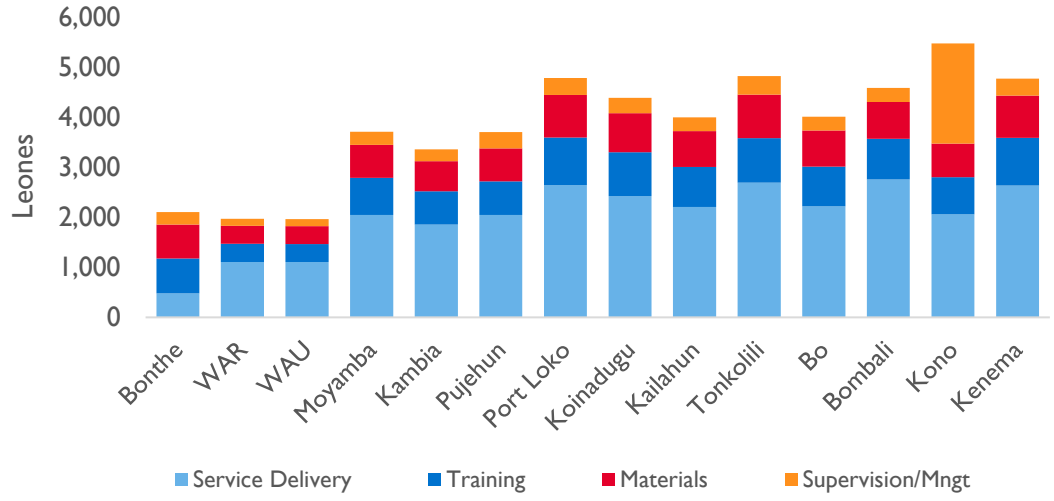


Figure 21 shows the financial cost of national CHWs by district without medicines, since the value of medicines is calculated based on the services provided and may have been overestimated in DHIS2. These values depend on the quality of the data on services delivered. With the exception of Bonthe, the cost driver in all districts was service delivery (comprising CHW and PS incentives and transport allowances).

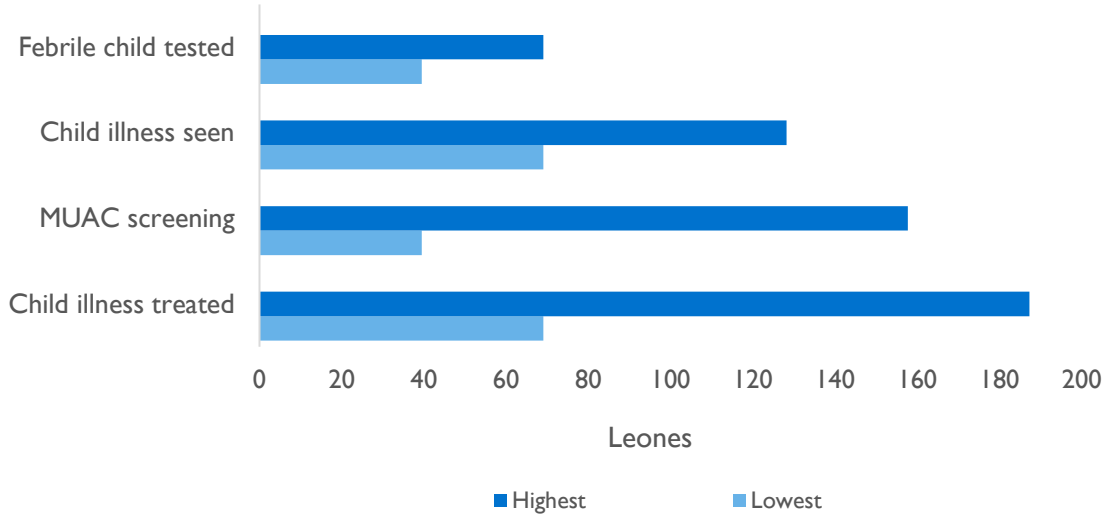
Figure 21. Financial Cost of National CHW Program by District without Medicines, July 2018-June 2019 (million Leones)



The costs per service provided by the national CHWs are shown in Figure 22 below. The cost per case of a febrile child, including testing for malaria, was estimated to range from 34,3697 Leones ($3.7) in

WAR to 70,315 Leones ($7.5) in Moyamba. The cost per child illness treated was estimated to range from 69,664 Leones ($7.4) in WAU to 176,096 Leones ($18.7) in Port Loko. Much of the variation across districts seems to be related to differences in reporting of cases, and when there were fewer cases, the cost per services was higher. More detailed information on the costs of services in each district is available in Appendix Table 31.

Figure 22. Cost per Service Provided by National CHWs from Lowest to Highest, July 2018-June 2019 (000s Leones)



Key Findings:

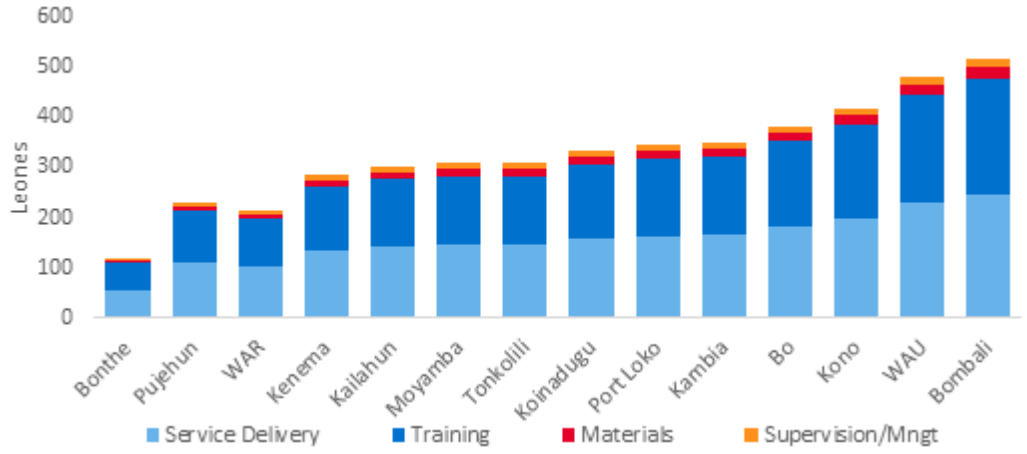
- The cost drivers for national CHWs were service delivery (incentives and transport) when medicines were not included and medicines when these were included.
- The cost of national CHWs was affected by the number of CHWs in each district and number of child illnesses seen and treated, as well as screenings for malnutrition services.
- The cost was also higher when NGO support was more intensive, such as in Kono district, where there was IRC support. The cost per child illness treated was higher in districts where there were fewer cases.
- The cost per child screened for malnutrition was also affected by the number of services provided.

TB CHW Program

Figure 23 shows the estimated financial cost of the TB CHW program from July 2018 to June 2019. The total cost of the program was estimated to be 4.8 billion Leones ($511,434) with the largest cost for the incentives paid to CHWs, followed by the cost of training. The cost of the program was highest in Bombali at more than 500 million Leones. The cost per referral of a TB case ranged from 178,344 Leones ($19) in Kenema to 2.6 million Leones ($281) in Bonthe. The cost per case of loss to follow-up (LTFU)

traced by CHWs ranged from 122,277 Leones ($13) in WAU to 2.9 million Leones ($310) in Kono. More detailed information is available in Table 32 in the Appendix.

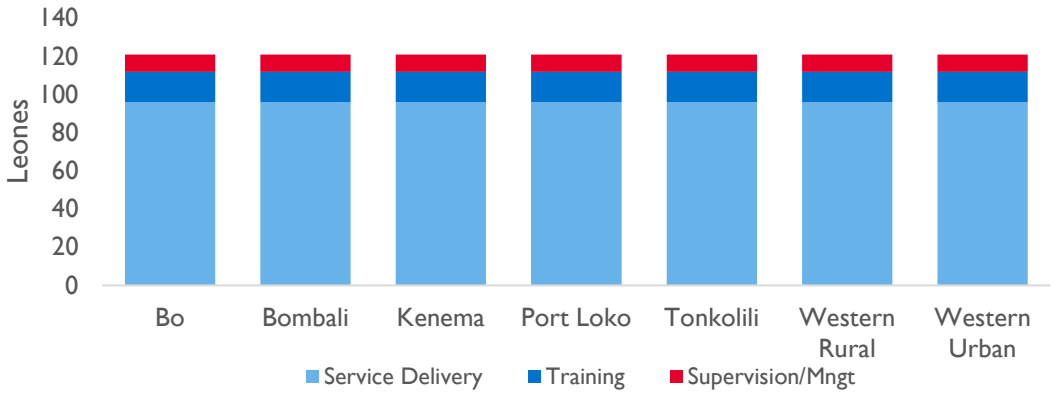
Figure 23. Financial Cost of TB CHW Program by District, July 2018-June 2019 (millions Leones)



HIV CHW Program

Figure 24 shows the estimated financial costs of the HIV CHW program for the period from July 2018 to June 2019. The costs are the same in each of the seven high-prevalence districts with HIV CHWs, since each has the same number of CHWs (40). The total estimated financial cost of the HIV CHW program during the period was 852.3 million Leones ($90,668) and the cost per district was 121.7 million Leones ($12,953). The cost driver of the HIV CHW program is service delivery (incentives) across all districts. The cost per case of LTFU followed up by CHWs ranged from 42,977 Leones ($5) in Bo to 943,831 Leones ($100) in Port Loko while the cost of bringing back a defaulter to care ranged from 177,743 Leones ($19) to 5.1 million Leones ($540). More detailed information is available in Table 33 in the Appendix.

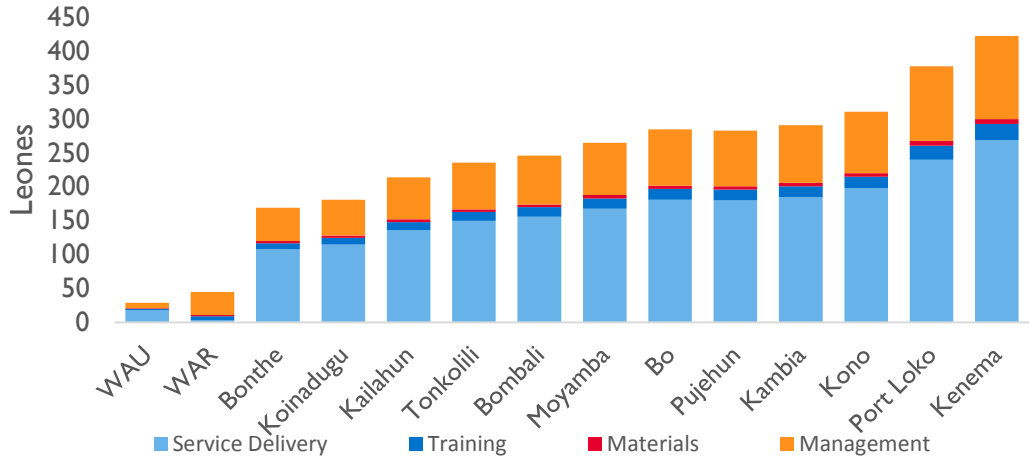
Figure 24. Financial Cost of HIV CHW Program by District, July 2018-June 2019 (millions Leones)



Malaria TBA Program

Figure 25 shows the estimated financial costs of the malaria TBA program for the period from July 2018 to June 2019. It should be noted that while the malaria TBAs were not paid their incentives during this period, these have been included in the analysis since this would show the cost of the program when fully functional. The total estimated financial cost of the malaria TBA program during the period was 3.5 billion Leones ($372,276). The cost per district ranged from 33.5 million Leones ($3,569) in WAU to 434.3 million Leones ($46,202) in Kenema. The cost per distribution of one dose of IPTp to a pregnant woman ranged from 6,034 Leones ($0.64) in WAU to 116,916 Leones ($12.44) in Kono. It should be noted that each pregnant woman should get three doses and the total cost per woman will be tripled. More detailed information is available in Table 34 in the Appendix.

Figure 25. Financial Cost of Malaria TBA Program by District, July 2018-June 2019 (million Leones)



DISCUSSION

This report has provided an overview and assessment of the CHW program in Sierra Leone covering the conception and design of the program, its implementation, and current challenges with service quality and efficiency in reporting. Implications of the assessment's main findings are discussed below.

Value of CHWs in Primary Health Care and Universal Health Coverage in Sierra Leone

The value of CHWs in providing primary health care and universal health coverage is well known. Studies argue that investment in CHWs is essential to achieving universal health coverage, and can result in an economic return of up to 10:1 (Dahn et al. 2015). Expanded access to key interventions provided by CHWs could prevent up to 3 million deaths per year. The scale-up of CHWs can create short-term cost savings in other parts of the health system, including reductions in the number of patients treated at facilities. CHW systems yield additional societal benefits including the empowerment of women and increases in income for households of paid CHWs. CHWs can also complement the facility based health system especially when it is inaccessible or systems are weak (Glenton et al 2013). Service provision at

the community level by CHWs is also cheaper than outpatient facility based care (Rogers et al. 2018; Vaughan et al 2018).

It is with this intention that the CHW program was established in Sierra Leone in 2012 to work at the community level as an extension of the PHU. Especially after Ebola, when there was limited trust in the health system, CHWs continued to work and provide necessary services to the community at large (Miller et al. 2018). The CHW program was revamped in 2016 with the drafting of the new CHW policy and the role of CHWs in Sierra Leone became further established as an extension of the formal health system at the community level. CHWs have the ability to reach populations at distances greater than 5 km from the PHU and those in areas hard to reach because of geographical constraints. They have the ability to refer their patients to the closest PHU and if needed escort them there as well. Earlier studies of community health volunteers in Sierra Leone have shown the contribution of these volunteers resulted in a 105% increase in treatment of pneumonia, a 55% decrease in traditional treatment of diarrhea, and fewer facility treatments for malaria (Yansaneh et al. 2014). As the analysis of DHIS2 data for the period July 2018 to June 2019 also shows, CHWs contributed to almost 30% of some of the primary health care services provided in some districts. CHWs also contribute to community-based surveillance and health promotion in addition to providing RMNCH services.

Through the government's Free Health Care Initiative launched in 2010, PHUs and CHWs are able to access drug supplies to provide at no cost to eligible populations, and approximately one-third of PHU drug supplies are supposed to be kept aside for CHWs' use. However, there are challenges in the full implementation of the initiative because of shortages in drug supplies and commodities in some areas. Findings from this assessment identified stock-outs of drugs and commodities as a major barrier to service provision for national CHWs and TBAs.

Overview of CHW Programs in Other Countries

CHW programs have been established in numerous countries in sub-Saharan Africa and Asia. Many countries have multiple cadres of CHWs aimed to improve access to basic health services for their populations. Some of these cadres are formalized positions within the health system that are paid a salary, while others are volunteers who are compensated with nonmonetary incentives.

In Ethiopia, health extension workers are a formalized cadre tasked with working both in the community and in the health post they are assigned to. In addition to these workers, Ethiopia has also established other groups of health volunteers, known as the "health development army," who focus more on providing health promotion and services solely at the community level. The extension workers receive a monthly salary, while the health army volunteers only receive nonmonetary incentives.

The main professionalized cadre of CHWs in Malawi are known as health surveillance assistants, who work in both rural and urban areas and are distributed to cover about 1,000 people each. They provide multiple services across various programs and receive a salary of about $100 per month. In addition, Malawi has additional volunteer cadres that are supervised by health surveillance assistants, including community-based distributing agents, community home-based care providers, growth monitoring visitors, sanitation promoters, community groups, peer educators, and members of village health committees.

These cadres are sometimes supported by NGOs but otherwise do not receive any monetary compensation.

Nepal has three cadres of CHWs: maternal child health workers, village health workers, and female community health volunteers. All three cadres are based out of health facilities that serve catchment populations of about 5,000 to 10,000 persons. Each health facility has one professional health worker, one volunteer health worker, one maternal child health worker, and at least nine female community health volunteers. The maternal child health and village health workers are considered formalized, full-time positions that receive a monthly salary of about $140. The female community health volunteers are considered part-time volunteers that receive a mix of nonmonetary incentives including a clothing allowance and community recognition. Further, these CHWs can retire with the benefit of free medical services offered through Nepal's Ex-Servicemen Contributory Health Scheme.

Rwanda is another example of a CHW program. It has an estimated 45,000 CHWs working at the community level. Each village has three CHWs to provide services: a male-female CHW pair (called *binômes*) providing basic care and iCCM of childhood illness and a CHW in charge of maternal health, called an *Agent de Sante Maternelle*. The combination of these three CHWs in each village is designed to cover approximately 100 to 150 households. All CHWs in Rwanda are considered to be volunteers and therefore do not receive a salary. However, they do benefit from a community performance-based financing scheme that was established to help motivate CHWs. Through this mechanism, CHWs receive and share funds based on achieving specific targets set by the MOH.

More details on CHW programs in Ethiopia, Malawi, Nepal, and Rwanda are presented in Appendix D.

Streamlining Deployment of CHWs

The global norm for the location of a CHW is a distance greater than 5 km from the health facility. Part of the reason for this is the need for community members to be able to access health services; CHWs can meet this need in communities located at greater distances from the health facility. CHW service utilization is also expected to decrease significantly at close distances to a PHU. A study from Uganda showed that distance from a health facility considerably affected use of CHW services. Households 1 to 3 km from a health facility were 72% more likely to access CHW services as compared to households residing within 1 km of a health facility (Mukanga et al. 2012).

Sierra Leone's 2012 CHW policy recommended a coverage ratio of one CHW for every 100 to 500 people (GOSL 2012). The 2015/2016 CHW geo-mapping census showed that community based workers and volunteers served a median of 250 people nationally, with significant variation by district (MOHS and UNICEF 2016). The 2012 policy recommended that CHWs be focused on hard-to-reach areas—defined as more than 5 km from a health facility. However, data showed that the lowest-level PHU, primarily staffed by maternal child health aides, was accessible to almost all of the population within 5 km and a large majority within 3 km. As a result, the national CHW program decided on a coverage ratio of one CHW to 1,000 people within "easy to reach" areas, defined as within 3 km of a health facility, and one CHW to 250 people in "hard to reach" areas, defined as beyond 3 km of a health facility, resulting in a total of 14,000 to 15,000 CHWs (GOSL 2016a). The 2015/2016 geomapping census shows that "almost all of the country's CHWs (91%) were within a 5 km radius of a PHU, over half (53%) are within 3 km,

nearly a third (30%) are serving within 1 km. In 2016, CHWs contributed an additional 10% to geographic access beyond what is covered within 5 km of a functioning PHU" (GOSL 2016a; MOHS and UNICEF 2016). Most all stakeholders agree that the current distribution of CHWs is not efficient in expanding access to services and resources could be more effectively allocated.

Sierra Leone's CHW program now includes more than 17,000 CHWs, of which almost 14,000 belong to the national CHW program providing iCCM services. With population estimates for 2018 and the current numbers of CHWs, Table 16 shows the large variation in Sierra Leone in the population per CHW, with CHWs in Bonthe district covering approximately 230 persons and 34 children under 5 (likely a few too many CHWs), while CHWs in WAU and WAR cover a much higher population.

Table 16: Number of CHWs by Population in Catchment Area and District

National CHW Program							
Districts	# CHWs	# PS	CHW/PS	Population (2018)	Area Km^2	Population/ CHW	Population U5/CHW
Bo	989	110	9.0	575,500	3,859	582	87.9
Bombali	1,008	112	9.0	606,500	6,053	602	90.9
Bonthe	872	85	10.3	200,800	5,641	230	34.8
Kailahun	830	90	9.2	526,400	7,895	634	95.8
Kambia	1,000	100	10.0	345,500	12,121	346	52.2
Kenema	1,209	109	11.1	609,900	7,003	504	76.2
Koinadugu	1,099	109	10.1	409,400	3,108	373	56.3
Kono	928	97	9.6	506,100	5,719	545	82.4
Moyamba	927	93	10.0	318,600	5,219	344	51.9
Port Loko	1,194	120	10.0	615,400	3,468	515	77.8
Pujehun	925	93	9.9	346,500	6,902	375	56.6
Tonkolili	1,218	123	9.9	531,400	4,105	436	65.9
Western Area Rural	495	55	9.0	444,300	544	898	135.5
Western Area Urban	494	54	9.1	1,056,000	13	2,138	322.8

The number of CHWs covering the population (target population size) does not follow a one-size-fits-all approach and depends on many factors, such as disease epidemiology, geography, scope and type of work, remuneration, etc. (See see box below for WHO recommendations.) Larger catchment populations may be more efficient, but may also lead to CHW burnout. For iCCM, the overall population served by CHWs usually ranges between 500 to 1,000 (WHO 2015).

Number of Working CHWs and Catchment Area

The number of working CHWs per number of the population (e.g. 1 per 1000 population) is a commonly measured '*implementation strength*' indicator. CHWs typically serve total populations of 500-1500 (e.g. 600 in

Nepal, 750 in Brazil, 1000 in Bangladesh, 1200 in Pakistan). A team of two paid Health Extension Workers in Ethiopia serve a total population of about 5,000 (2,500 each) and are assisted by a Health Development Army of volunteers trained to teach and model recommended household and community practices.

A study in Sierra Leone found a strong correlation between a larger number of children in a CHW's catchment area and lower treatment rates. For CHWs who had more than 50 children in their care, rates of community-based treatment of sick children were well below the expected. Perhaps when the CHWs had more than 50 children to care for, they were less well known to caregivers and/or less able to provide service to all the children who needed it.

Excerpted from: WHO 2015. Caring for newborns and children in the community: Planning handbook for programme managers and planners.

https://apps.who.int/iris/bitstream/handle/10665/204457/9789241508599_eng.pdf?sequence=1

The calculation of the most efficient number of CHWs in a country involves a detailed analysis also taking into account the caseload, location of CHWs, communities and their population and distance from PHU (<3, >3, > 5 km from PHU), expected role of the CHW, expected weekly workload (also linked to remuneration) and the time taken for travel to be able to provide all expected services. Ideally, the number of CHWs necessary would be determined through calculations, considerations and local knowledge at the district or other sub-national level. The CHW Coverage and Capacity Tool (C3), an Excel-based tool that models options for CHW allocation and engagement (MCSP 2019) is a good method to support these calculations. This tool can support planners to (1) estimate the number of CHWs required to efficiently carry out specified health interventions, or (2) define, rationalize, and optimize the effective level of coverage for and mix of activities/interventions that a set number of CHWs can undertake at a given geographic scale (project, subnational, national). The C3 tool application requires country specific assumptions made by country program managers and MOHS staff and creating scenarios related to CHW workload optimization.

Integration of CHW Cadres in Sierra Leone

CHWs are considered to be an even better investment when they deliver a suite of health services across multiple diseases. Given their ability to reach community members in the last mile beyond the health facility, CHWs have delivered numerous services including HIV screening, TB treatment, malaria testing and treatment in addition to RMNCH services (USAID nd). An integrated program eliminates the vertical siloes of disease programs. Although a specific cost analysis of savings as a result of integration is still needed, integration is expected to incur savings in salaries/stipends with fewer CHWs performing a broader role, lower training cost, fewer supervision visits with fewer CHWs, and less equipment to be purchased.

Sierra Leone has already taken a step towards integrating the TB and HIV CHW programs in the seven high burden HIV districts (GOSL 2019). This integrated model involving coordination between the two disease program directorates is a positive step to ensure coordination of activities for two populations that overlap considerably with co-infection. As the TB HIV strategy states, "the main rationale for integration is to improve efficiency and effectiveness of TB/HIV services. Secondly, it will reduce gaps in reaching client with services; contact/defaulter tracing, adherence, lost to follow up. Lastly, it will help

reduce cascade loss between TB & HIV patients." All TB and HIV CHWs in the 7 districts will be redeployed to both PHUs and hospitals based on the patient workload in the respective facilities.

An important consideration with integration is the workload of the CHW when taking on additional roles beyond what they currently do. There are several examples of efficiencies in Tanzania and Rwanda where a horizontal cadre offered a range of services without adding a lot of time to their workload. Adding hormonal contraceptives to CHWs' tasks in Rwanda did not negatively affect their workload or job satisfaction (Chin-Quee et al. 2015). However, adding additional tasks or programs to paid CHWs' tasks in Malawi resulted in overloading, making it difficult for the CHWs to complete their primary tasks (Smith, et al 2014). Furthermore, the location and targeted beneficiaries of the CHW also needs to be considered. In the high-burden districts, HIV CHWs are attached to the district hospital, although their role involves working with LTFU cases. In the case of TB, CHWs are attached to DOTS facilities only, although they work in the community supporting TB defaulters and those taking medication. Integration across HIV and TB will involve mapping out the number of CHWs and their roles to determine their location and the role they will play.

National CHWs' primary beneficiaries are people in their community and specifically pregnant women and young children. Thus, their primary place of work is in the households in their communities and not at the health post or hospital. This is particularly important to consider if TB/HIV program services are incorporated into the national CHWs' scope of work. The role of malaria TBAs, who also target pregnant women in their community but have challenges with literacy and reporting, will also need to be considered.

Any integration or harmonization of cadres and scopes of work of Sierra Leone's CHW programs must involve clear delineation of roles between the various actors at the national, district, chiefdom, and PHU levels. At the national level, the DPHC and CHW Hub need to take on such a leadership and coordination role, not just with the disease programs but also with donors and any other IPs such as UNICEF and other organizations providing technical and/or financial support. They will need to also ensure that information flows and processes are streamlined to the lowest levels. Table 17 summarizes the advantages and challenges of different models of integrating the CHW cadres' scope of work.

Table 17: Benefits and Challenges of Different CHW Program Integration Models

Program Options	Benefits	Challenges
Integrate malaria in pregnancy scope (malaria TBAs) into national CHW program (i.e., end malaria TBAs)	• Streamlining of service provision especially related to malaria • National CHWs already target pregnant women for other services/messages	• Malaria TBAs may have better access/rapport with pregnant women than national CHWs • Political considerations of ending malaria TBA program
Pair national CHW program with malaria TBAs	• Streamlining of service provision especially related to malaria • National CHWs offering iCCM services can now receive support from malaria TBAs, with clear demarcation of roles played by each group	• Does not lower the number of overall CHWs • Need to clearly define roles and responsibilities of each cadre and procedures for working together

	• National iCCM CHWs can support the malaria TBAs in their community, helping address challenges with literacy and poor reporting by malaria TBAs	
Integrate TB and HIV CHW programs	• Fewer CHWs • Overlapping of population served	• Location of CHW and population they serve—in communities or attached to hospital/DOTS site • Consideration of workload
Integrate HIV and TB programs within national CHW program; malaria TBAs remain specialized cadre	• Need for fewer CHWs performing multiple roles resulting in lower cost of the program • Easier and improved supervision with fewer CHWs • Malaria TBAs will continue to perform their specific role and support iCCM CHWs in their communities • Improved coordination at DHMT and PHU level, less vertical programming	• Location of CHW and population they serve—in communities or attached to hospital/DOTS site • Overburdened CHWs with a large workload • Need for improved coordination across disease programs at all levels • Need to follow clear reporting procedures • Need for training to cover all diseases

Comparisons of Costs of CHW Program with Other Countries

Table 18 compares the cost per capita for children under 5 with the Collins et al (2014) study of iCCM CHW costs conducted in several African countries. It should be noted that there are some differences in methodologies used in the current Sierra Leone 2019 assessment and the analyses in the Collins et al paper. That is, only financial costs were included in the estimation of costs in Sierra Leone in 2019; that is, no in-kind costs were included (e.g., district-level personnel time, volunteer time, donated goods), In the Collin's study, however, in-kind costs such as the value of national-level and district-level personnel time were included.

In general, the costs of the iCCM CHWs as part of the national CHW program in the current assessment were within the range found in the values for medicines and supplies and training. These were similar except for the cost of management and supervision, where the studies used different methodologies and as expected were lower in the current assessment because of the use of financial costing methods for the analysis. CHW remuneration (or incentives) were only estimated in two studies—the 2019 Sierra Leone and Malawi studies.

Table 18. Costs of Sierra Leone CHW Program Compared with Costs of CHW Programs in Other African Countries

	Current Sierra Leone (2019)	Cameroon (2012 adjusted to 2018 USD)	DRC (2012 adjusted to 2018 USD)	Zambia (2011 adjusted to 2018 USD)	Malawi (2010) (adjusted to 2018 USD)	Sierra Leone (2012 study adjusted to 2018)
Cost per capita (children under five)						
CHW remuneration	2.12	0	0	0	5.39	0
Medicines and materials	3.95	0.34	0.99	4.94	2.07	2.77

Training	0.96	0.87	0	0	0	0
Management and supervision	0.88	9.73	5.88	13.42	0.84	15.55

With regard to salaries/incentives paid to CHWs, studies from several sub-Saharan countries show that CHW salaries are typically $80 per month (Dahn et al, 2005). In comparison, the incentives paid to CHWs in Sierra Leone are relatively low.

Cost of the Sierra Leone CHW Program for Different Scenarios

The cost savings associated with a reduction in the number of national CHWs were estimated for two scenarios: (1) a reduction in 25% of CHWs and (2) a reduction in 50% of CHWs (Table 19). Thus, with a reduction of 25% of national CHWs, the total program costs will decline by 18.65%. With a reduction in 50% of national CHWs, the costs will decline by 37.4%. While the variable costs such as medicines, materials, and training would decline, it should be noted that some of the management costs are fixed and would not decline with a reduction in the number of CHWs.

Table 19: Impact of Reducing the Number of National CHWs on Costs

	100% National CHWs	75% National CHWs	50% National CHWs
Total w/out medicine	54.4 billion Leones ($5.8 million)	44.25 billion Leones ($4.7 million) ↓ 18.65% in costs	34.06 billion Leones ($3.6 million) ↓ 37.4%

Integration of CHWs into the Human Resource System

CHWs are an extension of the health system. Although they are not part of the formal health workforce in Sierra Leone, they need to work closely with health facility staff as well as chiefdom and district-level supervisors. To perform their role well, they also need to be recognized by health facility staff who treat them as an extension of the health system. The recent health labor market analysis conducted by WHO in Sierra Leone focused mainly on the formal health workforce, but given their important role in providing health services, CHWs were also recognized in this analysis.

For a well functioning CHW program with a community level workforce, equal effort is needed to ensure that the right candidates are recruited and sufficiently trained (Glenton et al, 2013). While CHWs in many countries are paid a stipend rather than a salary and not expected to work full time, it is important to ensure retention and limit turnover. Candidates with sufficient education and ability to perform need to be hired, importance should also be given to their role in the community. CHWs are the link to the community they belong to and work in. Having the trust of the community enables them to perform their role better and contribute to a greater extent. Every effort is needed to maintain this link for the success of the program. CHWs can also capitalize on the work of local groups and organizations like mothers groups or care groups in providing services in the community and ensure the uptake of health behaviors.

While CHWs are not always paid workers and not recognized by the Ministry of Human Resources in many countries, given their important role at the community level it is key to devise systems to give them recognition or other non-monetary benefits including the opportunity for training or receiving other certifications.

RECOMMENDATIONS

The Sierra Leone CHW program is in the early stages of implementation and has made great progress in a short period. This assessment takes stock of the progress made and notes areas that may require adjustment. Adjustments must be simple, manageable, and cost effective, as the program is early in stages. This section of the report outlines recommendations for the program covering both the design of the program going forward as well as details to improve the future implementation of the program.

Sierra Leone CHW Program Design

Coordination of Fragmented CHW Programs

- The DPHC/CHW Hub currently oversees the national CHW program, while the different disease programs—NLTCP, NACP and NMCP—are responsible for the management of the other three CHW cadres. For the most part, these vertical programs operate within silos. The national CHW policy and strategy were drafted in 2016 providing guidance for the selection and implementation of the program covering almost 14,000 CHWs and PS offering RMNCH services and predominantly focused on iCCM. Recently, a TB/HIV strategy was drafted in 2019 to provide guidance on the combined approach the TB and HIV programs would follow. No policy or strategy guidelines were available for the malaria TBA program.
- In some country programs, CHWs are integrated and handle all diseases. However, in some instances they are full-time health workers who are part of the formal health system, as in Ethiopia, or in other countries are paid higher amounts for the work they do. The issue of integration needs to take into account the added burden to CHWs.
- While integration can streamline service provision and supervision at the DHMT and lower levels, given the considerably lower cost of implementing the TB and HIV CHW programs as compared to the national CHW program, a large cost saving is not expected. Integration can bring about a cost saving even in terms of the TB/HIV program only if the number of CHWs is reduced, which is not proposed in the new TB/HIV CHW program strategy.

Recommendation:

- ***The question of how to improve fragmentation is one of governance, accountability and coordination. Even if the different CHW programs are implemented independently, the DPHC/CHW Hub needs to take on a stronger coordination role engaging the different disease programs. Through such a coordinating body, the incentive packages of the different CHW cadres can also be harmonized.***
- ***To ensure that there are no gaps, the disease programs need to coordinate with regard to primary health care at the DHMT, chiefdom, and PHU levels. Technical partners need to emphasize supporting CHW programs to harmonize, streamline, and/or integrate the roles of CHWs. Opportunities for such coordination include pairing national CHWs and TBAs to streamline their activities based on their comparative advantages. Roles should not be***

duplicated—e.g., male CHWs can talk to men and TBAs work with the pregnant women. CHWs focus on malaria testing and treatment, while TBAs focus on malaria prevention.

- ***It is suggested that integration follows a phased approach. In the immediate future:***
    - ***Coordinate roles of the national CHW and malaria TBAs with regard to support for pregnant women or malaria prevention in the communities they work in. Although the number of TBAs may stay the same at this point, a phased approach may result in a reduction of malaria TBAs offering services if politically feasible and if the new CHWs recruited are women who can take on some of their role.***
    - ***Continue with integration of TB/HIV CHW programs. With a better understanding of workload, consider the possibility of integrating with the national CHW program at a later stage.***
    - ***A potential research activity prior to full integration is to conduct a time use study to get a clear understanding of the time CHWs take to perform their current role and to estimate their ability to take on a larger role.***

Funding and Sustainability

- The Global Fund is the main donor for the all four CHW programs in Sierra Leone. However, the national CHW program follows an approach where a number of other donors add on the funds from the Global Fund by contributing to payment of incentives in different districts or contributing towards national level coordination, supervision and oversight costs. At this point, incentive payments as part of the CHW program are covered in all districts except Bonthe.
- The level of coordination among all donors and awareness and of each of their priorities is not always clear.
- Funds for two districts supported by the World Bank are provided through IHPAU, while monies from the Global Fund are routed predominantly through UNICEF, which also provides technical support for implementation. Because of the different funding mechanisms, the nature of technical support provided in each district tends to be different.
- In the overall results, Kono, which has IRC support for implementation, does better than others as far as data reporting, skills for quality services, etc. Koinadugu, where the IHPAU routes the funding and the DHMT supports implementation is the worst for payments to CHWs and also among the weakest in CHWs skills to provide quality of services out of the six districts surveyed in the assessment, although these results may be due to geography or other factors. Although it comes at a cost, technical support provided by IPs is valuable to support CHWs.
- As presented in Table 18, the costs of implementing the CHW program in Sierra Leone is comparable to that in other countries. Similar to CHW programs in many other countries, reliance on donor funds is an ongoing challenge for the Sierra Leone CHW program.

Recommendations:

- ***The pooling of funds would be advantageous, but may not be feasible given different donor priorities. Whether funds are pooled or are provided separately by each donor, the role of DPHC/CHW Hub as the main coordinating body across all CHW programs needs to be emphasized.***
- ***DPHC/CHW Hub should hold regular discussions with all key actors as a group—MOH (national and district levels), donors, technical partners, and implementing partners, etc.—to***

identify gaps and plan for current and future harmonized financial and technical support across districts. This will ensure coordination and understanding of constraints and priorities of the different organizations and how any gaps in funding or implementation may be addressed. An annual meeting may be proposed with opportunities for overall updates to all funding organizations covering not just the scope of their funding but details of the implementation of the entire program.

- ***A district-based approach is needed to examine the use of funds and coordination at the district level. As a first step, a district based costed plan may be developed and analysis conducted of caseload, use of resources and technical support received within each district.***
- ***Explore alternate models to fund and support the malaria TBA program. One example is the Essential Newborn Care Corps that was piloted in Bo district in 2014 to 2017 by Concern Worldwide, where the TBAs took on the role of health promoters and sold a basket of goods to support themselves (Concern Worldwide and JSI 2018).***
- ***There is advantage in the implementation of the CHW program through UNICEF or other technical partners. Although this may come at a higher cost, at this stage of the program, continuing such support is relevant to ensure appropriate training, program support, supervision, and service provision. The success of the community health volunteer programs implemented through partners such as IRC and Catholic Relief Services is a result of the technical oversight and supervision the organizations provide.***

Deployment of CHWs

- A geo-mapping exercise conducted by UNICEF in 2016 was used to determine the number of CHWs recruited in 2017 after the revised CHW policy was drafted. A decision was made that CHWs at a greater distance (>5 km) would be offered a larger amount to cover transportation costs. The catchment area handled by the two groups also vary with CHWs further away handling fewer households.
- Sierra Leone has a mixed and generalized HIV epidemic with an HIV prevalence of 1.5% since 2005 (UNAIDS 2018). A total of 280 HIV CHWs, 40 in each of the seven high-prevalence districts were recruited. TB CHWs were recruited in each district based on the expected caseload.
- According to the new TB/HIV strategy, there will be no reduction in the number of TB/HIV CHWs. A new deployment approach will be followed in the seven high-burden districts. The TB/HIV CHWs will be redeployed across facilities to achieve the proposed patient:CHW ratio of 1:20 based on global recommended literature and is a change from the previous strategy of 40 CHWs per district hospital in the 7 high-burden districts (GOSL 2019). This shift will allow for an optimization and improved efficiency of the CHWs, maximizing coverage and appropriately distributing workload.
- A total of 1,800 TBAs in their communities were recruited into the malaria TBA program to provide IPTp to pregnant women.
- CHW programs in other countries, even if they cover a larger catchment area or a larger case load (Ethiopia for example) often involve payment of higher salaries/incentives and/or involve pairing up of CHWs and community health volunteers who perform different roles to cover all required activities at the community level. Even in these cases, these programs face several challenges.

Recommendations:

- ***No immediate change is suggested to the number of CHWs deployed by the malaria, TB and HIV programs, beyond the proposed integration of the TB and HIV CHW programs.***

- ***In the context of limited funding [re]-define the roles and responsibilities of national CHWs and deploy different packages in different areas. Reducing the number of CHWs will need to be considered in the context of continued ability to conduct health promotion and community based surveillance activities in areas where CHWs have been eliminated.***
- ***Table 20 provides a number of scenarios for the deployment and the approximate number of needed CHWs given each scenario. Appendix E provides further information on these scenarios and number of CHWs necessary by district. The MOHS and its partners should consider these and other scenarios in deciding on the final distribution of CHWs across the country. The final calculations and decisions for a new CHW deployment policy need to take into consideration a number of factors and use existing data and tools.***
    - ***CHW services, workload and catchment area: The services that national CHWs provide should be re-considered. In communities less than three or five kilometers from a PHU, the CHW package may not need to include iCCM, as families can access treatment at the PHU. The tasks assigned to CHWs are intricately linked to their workload, available time and ultimately the catchment area they can be reasonably expected to cover. For example, quarterly household visits are an important part of the CHWs' scope of work, but require substantial time and limit how many households a volunteer CHW cadre can reasonably cover. The CHW Coverage and Capacity Tool (C3) recently developed by MCSP and available at https://www.mcsprogram.org/resource/community-health-worker-coverage-and-capacity-tool/ can estimate the number of CHWs required to efficiently carry out specified health interventions or define the effective level of coverage and mix of activities/interventions that the current number of CHWs can undertake. The implementation of this tool requires input from program managers and MOHS staff at different levels also taking into account the time needed to complete all assigned activities.***
    - ***Deployment of CHWs—or different CHW packages—to different geographies: CHWs currently cover all areas of the country, even in communities in close proximity to PHUs. This should be reconsidered, for example, hard-to-reach" areas for CHWs may be classified as areas > 5 km from a PHU to fit with global guidelines. One option (scenario 2) is to have salaried CHWs in these hard-to-reach areas providing all services, who could cover a catchment population of 1000 if working full-time (40 hours a week). Volunteer CHWs in areas <5km from a PHU would then provide all services, exclusive of iCCM. Another option (scenario 4) is to have volunteer CHWs deployed in areas >5 km from a PHU to provide iCCM services in addition to health promotion and community based surveillance, while CHWs in communities 3-5 km from a PHU could cover a larger population and focus primarily on health promotion and community based (scenario 4). In this scenario, there would be no CHWs in communities <3 km from a PHU, all treatment may be provided at the PHU and there would be a need expand the role of MCH Aides attached to a PHU to take on the role of health promotion and community based surveillance.***
    - ***Location of the population: The number of CHWs necessary will depend on the catchment area they can cover and the location of the population in their catchment areas. To calculate the scenarios below, we used secondary analysis done by Nicholas Oliphant provided at the request of UNICEF on Dec 2019 for the estimates of the population within and beyond three and five kilometer radius of PHUs. These estimates were developed using health facility locations and georeferenced population***

estimates. More detailed GIS analyses that include travel times to the PHU are available and could be used in final calculations (Oliphant et al. 2016).

- ***Once the MOHS and partners make decisions about CHW deployment and catchment populations, these policies should be operationalized at the sub-national levels (i.e. district or chiefdom), where there is local knowledge of the actual size of communities, logistical constrains, terrain (i.e. hard-to-reach areas due to rivers, mountains and other geographical characteristics, etc), and local needs.***
- ***As is done in some other countries, engage the local community through the existing village development committee or facility management committee to determine ways of funding and supporting these activities in communities close to the PHU.***
- ***Although exact calculations on number of CHWs are needed, reducing the number of CHWs by 25% could reduce the cost of the CHW program by 19%, to 44.2 billion Leones or $4.7 million.***

Table 20. Summary of scenarios for deployment of CHWs

	Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	~ Num. CHW	Total CHWs
Scenario 1	>3km from PHU	Volunteer CHW with stipend	Not specified	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	1,000 pop/ ~170 HHs	8,689	14,891
	<3 km from PHU	Volunteer CHW with stipend	Not specified	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	250 pop/ ~ 43 HHs	6,192	
Scenario 2	>5km from PHU	***Professional, paid CHW***	***40 hours***	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	1,000 pop/ ~170 HHs	910	9,755
	<5 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	850 pop/ ~ 145 HHs	8,845	
Scenario 3a	>3km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop/ ~60 HHs	6,213	13,497
	<3 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	850 pop/ ~ 145 HHs	7,284	
Scenario 3b	>5km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	2,421	11,286
	<5 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	850 pop / ~ 145 HHs	8,845	
Scenar	>5km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	2,421	4,191

	3-5 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	750 pop / ~ 145 HHs	1,770	
	< 3km from PHU	***No CHW***	***n/a***	PHU covers all activities and services currently done by CHWs < 3 km to PHU	n/a	n/a	
Scenario 5a	>3km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	6,213	6,131
	< 3km from PHU	***No CHW***	***n/a***	PHU covers all activities and services currently done by CHWs < 3 km to PHU	n/a	n/a	
Scenario 5b	>5km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	2,421	2,421
	< 5km from PHU	***No CHW***	***n/a***	PHU covers all activities and services currently done by CHWs < 5 km to PHU	n/a	n/a	

*Based on calculations from the C3 tool, except scenario 1, which uses catchment areas specified in the current national CHW policy

**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Remuneration and Payment Method

- Each of the four CHW programs has a different remuneration approach. The different CHW cadres receive different benefits, including monthly incentives, transport expenses, and other equipment, such as raingear and bicycles. Although CHWs are not expected to work full time, incentives paid are considerably less than a monthly salary and what CHWs receive in other country programs. Overall, most CHWs are paid about $15 to $25 monthly, except for malaria TBAs, who receive less. For example, health extension workers who are part of the formal health system in Ethiopia receive higher amounts and CHWs in Mali country receive approximately $80.
- Incentive payments are made via Orange/Airtel and have been challenging, both in terms of verification of active CHWs and payment procedures using SIM cards that become inactive with nonuse. The system is particularly challenging among TBAs with low literacy levels, who do not use their mobile phones and SIM cards as much.
- Delays and challenges in payment of incentives through Orange is an overall concern across all four CHW programs, contributing to CHW attrition. This system is time consuming, leaving less time for supporting supervision, oversight, and focus on quality of care.

Recommendations:

- ***Harmonize incentive packages across the CHW cadres to reflect their workload and roles. This is particularly important if integration of the CHW programs or expansion of activities is considered in the future.***
- ***The use of mobile money is a best practice but needs to be accompanied by a system that tracks and verifies CHW status, payments, current phone/banking—both in a database and by program staff. Staff are necessary to go to the field to verify CHWs, their status functionality, and phones/bank accounts. The system put in place would need to have mechanisms to update CHWs, CHWs' status, and phone/banking information. The World***

Food Program system called SCOPE is a similar platform that records all information and enables payment to beneficiaries and has been deployed in several countries. The development of a similar system may be explored. However, given the country context, several of the current challenges may still be faced.

- ***Alternate payment systems suggested are the system used to pay government staff, if that system is functional. Another alternative that may be considered is of payments being sent to the PHU through mobile transfer or other means and CHWs receiving payments through mobile transfer or other means when they are in the PHU for reporting purposes. This may be useful especially for TBAs. These alternate systems could also face some of the same challenges as being currently faced, so they need to be explored.***

CHW Roles and Workload

- Each CHW policy has clear guidelines for the activities that CHWs need to perform. Each cadre covers different activities, but there is some overlap in activities of the national CHWs and the malaria TBAs. While malaria TBAs provide doses of IPTp to pregnant women, they may also provide guidance on malaria prevention, and provide emotional support to pregnant women or accompany them to a PHU for delivery, a role that national CHWs also perform. TB and HIV CHWs have clearly specified roles, which are being consolidated with the implementation of the new TB/HIV strategy.
- Although the role of the CHW is not meant to be full time, the policies/strategies drafted do not specify the workload of CHWs in terms of number of hours or targets they need to meet.
- National CHWs are expected to conduct community-based surveillance, health promotion, and behavior change in addition to iCCM. However, they seem to emphasize treatment to a great extent. There is a tendency for CHWs to refer patients to the PHU in a large number of instances. Drug availability is also a challenge, which may also contribute to clients being referred to the PHU for treatment.
- Each CHW cadre has a different reporting and supervision procedure. Data from the national CHW and malaria TBA programs are currently part of the DHIS2 but not yet for the TB and HIV programs.

Recommendations

- ***Although CHWs value their ability to prescribe drugs and treat patients or make referrals to the PHU, the importance of community-based surveillance and health promotion needs emphasis. Clear guidelines on prescription of drugs and when to refer patients and when they should be treated are also needed and should be emphasized during training.***
- ***Draft revised CHW policy with clear workload guidelines on how many days and hours CHWs are expected to work. Conducting a small time use study in select areas can inform this guidance.***
- ***CHW roles need to be defined after determining supply chain challenges in availability of medication. If the supply chain process faces challenges and drugs and commodities are not easily available at all times, program managers may want to [re]consider the inclusion of iCCM treatment within the CHW program [and promote identification and referral of illnesses by CHWs].***

Selection Process and Integration into the National Human Resource System

- CHWs for all programs were recruited in 2017 with the support of the community. Although the national CHW policy provided some guidelines on gender, education etc., the majority of national

CHWs are males. Although they report higher education levels, their ability to complete forms and report data accurately is limited. The policy outlines the roles of CHWs but does not clearly specify the number of hours CHWs are expected to work.

- All malaria TBAs were recruited into the program to provide IPTp in their respective communities. As a result, they are generally older women with low education and literacy levels.
- TB and HIV CHWs were recruited based on guidelines in the policy. A greater percentage of HIV CHWs tend to be female. New guidelines with education standards are now included in the new TB-HIV strategy.

Recommendations

- ***New recruitment of CHWs based on the updated policy should focus on the gender balance and education of CHWs to ensure that they are able to perform their role as expected. Although recruitment should be conducted in coordination with the local community to ensure the right candidate valued by the community is enrolled into the program, the basic requirements of education, for example, should be met.***
- ***Even if the Ministry of Human Resources does not accept the position of CHWs in its formal cadre, there is need for ongoing discussion and engagement to determine opportunities to offer some benefits, accreditation, or training based on the work they perform.***

Integration into the National Health System

- It is well recognized that CHWs are an extension of the PHU and offer primary health services to the last mile. Their services are valued across different countries, including Sierra Leone. However, they are not part of the formal health workforce in Sierra Leone as they are in some other countries such as Ethiopia or Ghana. They do not meet minimum government education standards and are not recruited using formal government hiring procedures, nor are they provided a comparable salary. They receive an incentive and coverage of transport costs for services rendered.

Recommendations

- ***CHWs should be well recognized as an extension of the health system. PHU staff should be sensitized regarding their valuable role in the community. Clear definition and discussion of the role of PHU staff and CHWs is needed so they can coordinate drug availability, referrals, and antenatal and postnatal services to pregnant women to enable provision of primary health care down to the last mile.***
- ***Data compiled by CHWs on services rendered should be analyzed along with services rendered by the closest PHU. This is critical to ensure that there are no gaps and the needs of all populations are met. In this context the need for good quality data should be emphasized.***

Training

- CHWs received training upon enrollment. A two-step process involving a TOT and district-level training over a 10- to 12-week period was conducted. However, there has been turnover of CHWs across all cadres, and new CHWs have been enrolled to replace those who left the program. Currently, there is no formal system to train newly recruited CHWs.
- The CHW survey conducted as part of this assessment also showed a high level of referral for uncomplicated cases, expressing the need for refresher training.

Recommendations

- ***There is need for refresher training for the original cadre of CHWs recruited in 2017. When the new CHW policy is drafted and some of the CHWs are replaced if they do not meet basic education standards, those newly enrolled will need to be trained. iCCM training is needed using globally accepted training materials and more intensive training on treatment of cases and guidance on when cases can be treated and when they should be referred.***
- ***Training should cover all components of iCCM and all activities CHWs are expected to cover including health promotion.***
- ***Training should also emphasize skills in data collection and reporting and practices to ensure data quality.***
- ***PHU staff should be included in some of the training so they are aware of ways they can support CHWs when they perform their role. This is particularly important with TBAs, since they interact with the PHU in-charge during the reporting process.***
- ***TBAs should be trained in the use of tools with pictures. Highly pictorial reporting has been used in other contexts—with just tick boxes or circles filled in for the/each service provided. Another approach is to have some objects (such as pebbles or beads) put in a box or bag for each service provided and counted at the end of the month.***

The table below presents an overview of the findings and recommendations related to improvement of data quality in the CHW program.

National CHW Program Findings and Recommendations on Data Quality

	Key Findings	Potential Recommendations	Considerations
National CHW reporting (barriers and opportunities)			
Overall	• Although the use of CHW data was not an explicit focus of the assessment, we did not find evidence of widespread use of community data at any level.	The MOHS, donors, implementing agencies, program managers, and health workers at all levels should encourage and support review and use of routine CHW data. The more data is used, the more data quality will improve, and the more data quality improves, the more useful the data will become.	
Design	• Forms are somewhat complicated and difficult for CHWs to use, with many indicators, especially RMNCAH register (cohort register). • Low-literacy CHWs report issues with registers (i.e., not filling in, having relative fill in after encounter). • CHWs report registers are difficult to fill in because of small boxes . • Registers are also heavy (left at home).	• Few data elements are reported from RMNCH registers; could develop an easier-to-use job aid and reporting form for ANC data. • Develop, modify, or adopt (i.e., IRC in Kono) simplified RMNCH register • Consider modifications to all CHW registers to make them easier for CHWs to manage and complete; especially low-literacy CHWs	Consider a co-creation process where CHWs, PS, and PHU in-charges help to design the registers
Implementation	Lack of data collection and reporting tools (especially CHW registers • Some were not available/received or full (and using blank notebook). • Some were not completed by CHWs. • Some were illegible for DQA because of carbon copies. • Some not complete due to lack of commodities.	In order to allow data quality audits/checking of source data and improvements in the data quality and reporting, CHW program managers should: • Ensure source documents (registers, reporting forms, etc.) are available to CHWs and PS through a distribution system that builds on monthly review meetings and supervision visits (PS and PHU) • Consider different procurement/quality for carbon paper registers • Develop a low-cost and feasible system for archiving CHWs, PS, and PHU documents, in coordination with CHWs, PS, and PHU in-charges, to allow data quality audits, etc., and provide standard operating procedures (SOPs) and orientation on this system to CHWs, PS, and PHUs • Consider provision of a bag, binder, or protective cover to ensure integrity of registers	Consider some better performing districts/areas (X, Y, Z) and incorporate their experiences/successes into national SOPs/ systems
	Archiving system not in place at lower levels (CHW, PS and some PHUs), making data quality checks or supervision difficult to impossible; CHWs report difficulties in keeping registers in good condition		
	Availability, timeliness, and completeness of community reporting appeared to be adequate at PHU and DHMT levels, but reporting and data quality were unclear at PS and CHW level.	In order to improve data and reporting timeliness, completeness and quality, and reporting, MOH, donors, implementing agencies, and managers should support the program to:	

	Key Findings	Potential Recommendations	Considerations
	CHWs received initial training on data collection, management and reporting, but report no refresher training and limited support to maintain skills in data collection, management, and reporting; some CHWs are confused on what data to collect and report.	• Develop and/or disseminate SOPs for data collection, management, reporting practices • Provide refresher training/orientation to CHWs, PS, and PHUs on data collection, management, reporting practices (SOPs); these training could be on the job or incorporated into the monthly review meetings • Provide ongoing support for data collection, management and reporting through supervision visits, monthly meetings • Consider developing/adapting tools or job aides (e.g., guidance sheets, calculators, etc.) to assist PS and PHU in-charges in checking and compiling data	
	Many PS and PHU in-charges felt they did not have enough training and lacked the skills to adequately review and compile CHW data.		
	Lack of clear guidance on data reporting guidelines and flows (i.e., RDT-positive issue and PS reporting directly to DHMT)		
	Lack of M&E staff/data officers to manage community data and verify quality, promote data use, etc.	MOH, donors, implementing agencies should: • Consider hiring additional M&E staff/data officers (at district or national level) to manage and ensure the quality of community data; this staff could assist with recommendations above • Consider incorporation of oversight of community data into the overall DHIS2 health management information platform and assign specific health management information staff to community data	
Metrics	Assessment could not track the completeness and timeliness (no dates on some forms) of all reporting requirements; peporting completeness and timeliness does not appear to be tracked in DHIS2	Ensure metrics and monitoring of completeness and timeliness of reporting at each level (CHW to PS; PS to PHU; PHU to DHMT) and incorporate into DHIS2 platform[2]	
	CHW monitoring DHIS2 dashboard shows malaria and pneumonia indicators; use of data for program management/quality at other levels is less clear	• Encourage/orient on use of DHIS2 dashboard at all levels and expand to include CHW reporting and timeliness of reporting • Consider introducing tools for data review and use at different levels to encourage data quality checks and	
Potential research opportunities: • Pilot test redesigned registers • Process evaluation of efforts (per recommendations) to improve data availability, completeness, and quality • Codesign and pilot digital tools for data collection, management, and reporting			

[2] Incorporation into DHIS2 may need to wait until next revision; may need to set up system to monitor reporting outside of DHIS2

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APPENDIX A: DETAILED METHODOLOGY AND SAMPLE

Data Collection Activities

CHW Survey of Services and Skills

To assess performance and measure the value of CHW outputs, a survey was administered to a sample of 594 CHWs providing a variety of services (including HIV/TB and malaria services) at selected central locations across six districts in Sierra Leone (Table 21). The division of CHWs into the different groups (iCCM, TB/HIV, and malaria TBAs) within the sample was based on the distribution of the different CHWs within the sampled districts. The instrument for the CHW survey was developed in English for administration using tablets in the appropriate local language and is presented in the accompanying document.

To identify the final sample, the research team randomly selected five chiefdoms in each district. From there a master list of CHWs for each district was used to randomly sample 15 CHWs attached to PHUs in each of those chiefdoms. A smaller number of TB and HIV CHWs and malaria TBAs were from the same chiefdoms in a similar manner. In the three districts where HIV CHWs work, they were randomly selected from the rosters of the district hospital/ART site.

Table 21: Sample for CHW Survey

Districts	National CHW	HIV CHW	TB CHW	Malaria TBAs	Total
Bo	80	10	12	10	111
Koinadugu	75	-	17	10	102
Kono	75	-	15	10	100
Moyamba	76	-	17	10	103
Tonkolili	67	-	10	10	86
Western Area Urban	56	14	18	7	92
Total	429	24	89	57	594

*Material audit was conducted on a total of 59 CHWs providing overall RMNCH services, totaling 10 in each of the six sampled districts except Kono, where nine CHWs were sampled.

The CHW survey was administered through a structured questionnaire covering topics related to CHWs work (areas covered and number of households covered, working hours, etc.; type of services provided; general demographic information; supervision visits; data collection and reporting procedures; and job satisfaction.

Case Scenarios

In addition to the interview questions, the CHW survey included an assessment of their skills to provide quality services. The research team assessed CHWs' skills through a number of written and video case scenarios created by the World Health Organization as part of the Integrated Management of Childhood Illness training series, which were adapted to the Sierra Leone context. CHWs were shown different videos depicting a child with a particular illness and were read a narrative that describes the case. They were then asked to classify the signs and/or illness they were observing and the actions they would take, including treatment and referral.

Record Review

CHWs were asked to bring their registers and tools to the central location for an additional measure of quality. Extraction of data from CHWs' registers allowed the team to assess the coherency (quality) of CHWs' assessment, classification, and treatment of sick children, i.e., if febrile children were administered an RDT, if RDT-positive cases were prescribed an ACT, or if children with fast breathing were prescribed an antibiotic.

Material Audit

An important aspect of assessing service quality is to observe whether CHWs have all of the required reporting forms, job aids, equipment, and commodities needed to perform their day-to-day activities. To assess this, data collection teams visited CHWs at their sites. Because of the logistics required to travel to these sites, a smaller subset of 59 CHWs (nine from Kono and 10 from the remaining districts) offering RMNCH/iCCM services, were selected to conduct a "material audit" by observing the availability and use of these materials. For further efficiency, this information was collected as part of the DQA activities at the CHW level and therefore did not cover HIV and TB CHWs and malaria TBAs. The selection of CHWs for the material audit followed the same procedures as the DQA, which are outlined below.

Survey of CHW Beneficiary Households

The team undertook a small, targeted beneficiary survey covering 173 households that recently received CHW services in two districts, Bo and Koinadugu (75 In Bo and 98 in Koinadugu). These two districts were selected in consultation with the Global Fund and the CHW Hub, and these households were identified during the CHW survey based on a review of their registers. The CHW-Beneficiary households were systematically identified based on their receipt of different types of services, for example, (1) care for a febrile child by a national CHW, (2) household well-child/preventive visit for child 0 to 15 months of age by a national CHW, (3) TB track and trace or DOTS visit by TB CHW, or (4) malaria/prenatal services from TBA.

Respondents of the survey representing beneficiaries who received RMNCH services or malaria services from TBAs were adults receiving care including adult females who were caregivers of infants and children who received CHW services in the month of June 2019 (the month preceding the survey). TB patients were adults who received TB services within the past six months. More specific information on the sample is presented in Table 22.

Table 22: Sample for CHW Beneficiary Household Survey

	Districts		Total
	Bo	Koinadugu	
National CHW services			
Case management of febrile child	39	40	79
Household visit for infant during 1st, 5th, 9th, 12th, and 15th months to ensure vaccination and appropriate feeding	24	38	62
Services from TB CHWs	7	10	17
Services from Malaria TBAs	5	10	15
Total	75	98	173

Note: No HIV beneficiaries were included in the CHW Beneficiary Household Survey because of small numbers in each district.

The beneficiary survey, administered on a mobile device, was used to examine interactions with CHWs by type of service provided, adherence of provided care to CHW protocols and perceptions of care. It also gauged household level of satisfaction and perception of quality of services offered. The survey tool used for CHW-Beneficiary households is presented in the accompanying document.

Qualitative Interviews with Key CHW Program Stakeholders

To gain a deeper understanding of the reporting process, the evaluation team conducted in-depth interviews with 42 key respondents at multiple levels of the health system across each of the six districts. Donors, IPs and MOHS staff attached to DPHC/CHW Hub, NACP, NMCP, and NLTCP were also interviewed at the national level. Interviews covered the following topics:

- Different roles at each level of reporting (CHWs [iCCM, TB/HIV, and malaria TBAs]), PS, PHU in-charges, CHW focal persons/district supervisors)
- Processes for validating the data being reported
- Satisfaction with the CHW program at each level of the system
- Perceived strengths, limitations, gaps, and opportunities for the CHW program related to training, supervision, motivation, and other factors such as cost, governance and leadership, community engagement, and sustainability

Two focus group discussions (FGDs) were held with community members in the two districts where the CHW Beneficiary Household Survey was conducted (Bo and Koinadugu) to get an understanding of community perceptions of the different types of CHWs, including knowledge of their activities and their performance, including quality of services provided. One community in each of the two districts was randomly selected for the FGD. Twelve community members participated in the focus groups, which comprised men and women who would typically access services from a CHW in the community

Table 23 outlines the key respondents for the in-depth interviews from each category and FGDs of community members by district. In-depth interview guides for the different groups are presented in the accompanying document. The guides were drafted in English and administered in the local language when needed.

Table 23: Respondents for Qualitative Data Collection

	Bo	Koinadugu	Kono	Moyamba	Tonkolili	Western Area Urban	National Level	Total
CHWs*	2	2	2	2	2	2	-	12
PS*	1	1	1	1	1	1	-	6
PHU in-charge	1	1	1	1	1	1	-	6
CHW focal person/district supervisor*	1	1	1	1	1	1	-	6
Donors and IPs	-	-	-	-	-	-	8	8
MOHS – CHW Hub, NACP, NLTCP, NMCP	-	-	-	-	-	-	4	4
Total in-depth interviews	5	5	5	5	5	5	12	42
FGD with community members (5-7 persons each)	1	1					-	2

*Note: Overall, the sample included at least one CHW in each of the following groups (HIV/TB CHWs, TBAs, PS, CHW focal persons/district supervisors).

Data Quality Assessment

A DQA was conducted to thoroughly determine the quality (defined as availability, completeness, and timeliness) of data collected through the CHW program as well as highlight any gaps or deficiencies within the structures of the community health information system. To conduct the small-scale DQA, the research team utilized the Multi-Indicator Routine Data Quality Assessment (M-RQDA) tool developed through the USAID-funded MEASURE Evaluation project, which was adapted for the Sierra Leone context. This tool facilitated the two main components of a DQA: validation of collected and compiled data and an assessment of the information system through which data is being collected. The M-RDQA tool adapted for this assessment is presented in the accompanying document.

The DQA consisted of two components: data verifications (quantitative component) and a system assessment (qualitative component). The tool was administered at all levels of the community health information system, including the CHW, PS, facility, DHMT, and national program.

The data verification involved two parts—recounting reported results and the reporting performance. To verify data through recounting reported results, the team selected four indicators across the multiple CHW registers to recount and compare over the reporting period of March 1, 2019, to May 31, 2019. The indicators selected for this verification included: live births (male), ACT administered, ORS administered, and antenatal first visits. However, due to the lack of availability of source documents (i.e., CHW registers and PS reports), the research team was unable to adequately recount reported results. Reporting performance was measured through calculating the percentage of reports that were available to be reviewed at each level, the percentage of reports that were received on time at each level, and the percentage of reports that were fully completed.

The qualitative component of the DQA examined the performance of the overall data system through short interviews with respondents about various topics, including training, collection and reporting guidance, support and supervision, archiving practices, barriers to collecting, managing and/or reporting data, and data use.

Additional information related to the DQA sampling and sources is included in Table 24.

Table 24: DQA Sample by Respondent Type

	Bo	Koinadugu	Kono	Moyamba	Tonkolili	Western Area Urban	National Level	Total
CHW	10	10	10	10	10	10		60
PS	2	2	2	2	2	2	-	12
PHU	2	2	2	2	2	2	-	12
DHMT	1	1	1	1	1	1	-	6
National CHW program	-	-	-	-	-	-	1	1

Abstraction of Costing Data

Cost data were analyzed to answer the following questions:

- What is the total cost of the national CHW program?
- What are the costs associated with providing each type of service (or the cost associated with providing services by each cadre of CHWs)?

The costs of the national CHW program in Sierra Leone were analyzed for the period July 2018 to June 2019. The costs of four types of CHWs were included: national CHWs, TB CHWs, HIV CHWs, and malaria TBAs. The study perspective of the analysis is that of the health care system focusing on the cost of health service delivery, rather than societal (i.e., does not include client costs). The type of costing used in this analysis was financial—i.e., based on actual outlays rather than economic (includes in-kind costs such as volunteer time, donated goods, and government supervision) due to lack of information on the value of in-kind costs. As a result, the costs of national- and district-level management and supervision of government employees were excluded from the analysis because these were not additional costs incurred for the CHW program and include costs that would have been incurred anyway.

The costs of the following activities related to the CHW program were analyzed by activity: training, service delivery (incentives, medicines, materials, equipment, and transport), supervision, and management. For activities that occur one time as a start-up activity, such as training, costs were annualized over three years. Equipment were also annualized based on information on replacement frequency. For example, job aids were assumed to have a useful life of five years while backpacks had three years.

CHW service delivery includes incentives, transport, materials, and equipment. UNICEF pays incentives for national iCCM CHWs for Gavi in two districts and the Global Fund in 11 districts; the World Bank pays for iCCM CHWs in two districts through IHPAU, while other implementers manage CHW programs with

Global Fund financing for other types of CHWs (NLTCP and the Civil Society Movement Against Tuberculosis for TB CHWs, NMCP for malaria TBAs, and NACP with PIH for technical support).

Table 25: Assumptions for Financial Cost Calculations

	National CHWs	TB CHWs	Malaria TBAs	HIV CHWs
No. CHWs Peer supervisors	7,228 762	1,207 trained	1,814 NA	280 14
Activities costed	Training Service delivery Supervision Management	Training Service delivery Supervision Management	Training Service delivery Management	Training Service delivery Management
Incentives CHW PS	 100,000/month 150,000/month	 150,000/month 150,000/month	 100,000/month**	 250,000/month 350,000/month
Transport Easy to reach Hard to reach PS transport	 50,000 80,000 100,000	NA	NA	NA
Trainings	TOT in 2017 One training per district	TOT in 2018 One training per district	Basic training in 2018	TOT in 2018 One training per district
Materials	Referral tickets, gloves, counseling cards, registers, job aids	Job aids, treatment calendar, referral tickets, contact tracing form, monthly summary forms, training manual, CHW tally form	TBA register, job aids, flow chart for management of malaria, bench aids for basic malaria diagnostic tests	Defaulter tracing form, TB form adapted
Medicines	Multiplied unit cost of medicine by number of services provided	NA	Multiplied unit cost of SP by number of IPTp provided	NA
Equipment	Tee shirt, backpack, torch light, badge/id card, rain gear, medicine box, sharps container, MUAC tape, ARI timer	Rain gear, bicycles, back packs, boots	NA	NA
Management	Support from CHW Hub, DFID support for policy development, UNICEF support for paying incentives and transport and procurement of drugs, materials and equipment, and NGO management	No management cost	Support from PIH	National level

Supervision	Cost of supervision visits of regional coordinators to DHMT and PHU once a quarter and of CHW focal points to PHU 12 times a year	Quarterly CHW meetings at district level, national level quarterly monitoring visits by national program, national level quarterly monitoring visits to CHWs	No additional supervision cost	No additional supervision cost
Most relevant indicators	Cases of child illness seen (fever, ARI, diarrhea) Febrile children tested with RDT Cases of child illness treated (ACT, antibiotics, ORS and zinc) No. children screened for malnutrition	# of case notifications; LTFU	Number of IPTp given to pregnant women	Cases of LTFU followed up by CHWs; cases of defaulters and LTFU brought back to care after follow-up
Allocation of CHW time	40% on diagnosis, treatment and referral of child illness 40% assessing malnutrition status 20% postnatal care	90% on referrals for TB cases 10% on LTFU traced by CHWS	100% on IPTp given to pregnant women	100% on cases of LTFU followed up by CHWs

Note: Financial costs are costs that are based on financial outlays and do not include in-kind costs.
Payment has not started yet for malaria TBAs but the estimated costs have been taken into account. In some cases for other CHWs, the incentives have not always been paid but these are still estimated in this analysis as costs that would be incurred for the specified time period.
Supervision costs for HIV CHWs are taken into account as part of PS supervision.
Allocation of CHW time is based on discussions with program managers

Review of Administrative Data

The main source of administrative data (including CHW service delivery for children under 5, HIV, TB, and malaria where available) to inform the cost-effectiveness exercise was Sierra Leone's health information system. Data for HIV and TB were obtained from districts through the NACP and NLTCP national programs. Information on the activities of malaria TBAs and national-level CHWs with regard to their training, services provided, and frequency and completeness of reporting were downloaded from the national system (DHIS2) and analyzed and disaggregated by the 14 districts for the time period July 2018 to June 2019. Selected indicators of interest were downloaded from the national DHIS2 into MS Excel and cleaned and sorted for analysis.

Data Collection and Management

Quantitative Data

The quantitative surveys (CHW survey, beneficiary household survey) were administered to sampled CHWs and household members respectively using mobile data collection methods by enumerators employed by the data collection partner, Focus 1000. Prior to data collection, the instruments drafted in English were input into the mobile data collection server and tablets using SurveyCTO software. This

allowed the research team to access data in real time as well as create immediate data quality checks to ensure that reliable and high-quality data were being collected.

Enumerators were trained to field the surveys using tablets. MOHS staff from the CHW Hub, NACP, NLTCP, and NMCP were part of the enumerator training to provide more information on the context and the experiences of CHWs to ensure that data collection is conducted successfully. Data collection took place following pilot testing of instruments in areas around the training location. Any changes to the instruments were based on learnings from pilot testing and inputs from stakeholders during training.

Data collection for the CHW survey took place in the main towns and/or central locations among the selected chiefdoms, and respondents were reimbursed for transportation costs to travel there from their homes to participate in the interview. The material audit was conducted in CHW homes to enable the teams to visibly verify the availability of their commodities and materials as well as to assess the conditions under which they were stored.

Data collection for the CHW-Beneficiary household survey took place at the community level. Respondents were selected through reviewing CHWs' registers and randomly selecting clients who had received particular services within the past month. Once identified, beneficiaries were contacted and asked to participate in the survey. All interview respondents were adults and did not include beneficiaries receiving HIV services.

Qualitative Data

The FOCUS 1000 team conducted qualitative interviews in the local language appropriate for each region. Each interview was recorded, and the interview team compiled expanded notes on the conversation. Interview guides outlined the topics to be covered during discussions with each respondent type and focused on topics such as the respondent's role in reporting CHW-related data, data processing procedures, the frequency and focus of training and supervision, and overall perceptions of the program.

The data collection team worked through community leaders to identify the participants of the two FGDs in the communities. The FGDs were held in a central location and participants were reimbursed for transport for participating in the FGDs.

All interviews were conducted after obtaining verbal consent after the project information sheet was read to and shared with the respondent (Appendix C)

Data Quality Assessment

The DQA conducted at CHW sites was facilitated by FOCUS 1000 field teams. As mentioned earlier, this assessment used an adapted version of the Measure Evaluation project's M-RDQA tool, which collected data in an MS Excel format.

Costing Analysis Data

Data collection for the costing analysis and administrative data used an MS Excel–based data abstraction tool for data compilation. The study team collected data on the costs associated with the CHW program from July to September 2019. It included a country visit in July 2019 and numerous phone calls to follow up with the CHW Hub, IHPAU, and UNICEF on missing data.

Cost-efficiency analysis is estimation of the monetary cost to achieve program outputs, e.g., cost per CHW child visit. Data were collected for all 14 districts of Sierra Leone. The main data sources for this information were the donors, implementers, and DHMTs. The time period covered was July 2018 to June 2019. The final cost data are organized in such a way to allow other users such as the DPCH/CHW Hub to add new cost data to allow program costs to be updated as needed for additional analysis. A read-me document accompanies these executed budgets to facilitate the data extraction process.

Ethical Considerations

Data Management and Confidentiality

The CHW evaluation team ensured respondent confidentiality throughout the data collection and data management. Data specifically excluded HIV clients, and all data was collected was deidentified and stored in files that could only be accessed by the assessment team.

Recruitment and Informed Consent

All study participants were asked if they were interested in participating in the study. Participation was voluntary and noncoercive. Interviewers and data collection supervisors were trained in informed consent and confidentiality principles and protocols. Evaluation staff went through a training module and signed a confidentiality agreement. Study participants were presented with an information sheet that specified that their participation was purely voluntary. Interviewers obtained verbal consent from respondents and signed the information sheet. No respondent was enrolled in the survey process against his/her will. Refusal to participate had no bearing on the conducting of work by CHWs in the future, payments to CHWs, or beneficiaries' receipt of services. Participants could choose to stop at any point in the survey, interview, or discussion with no penalty or bearing on their employment status. All participant data were confidential. Participants were also reassured of the confidentiality of their responses, and the risks and benefits associated with the study were clearly explained.

Contact information for the CHW program evaluation team was provided and they were available for questions if participants had questions or concerns. A copy of the three relevant information sheets used with the different data collection instruments are included in the companion document to this report.

All identifying information such as the name of the CHW were removed from the data sets as soon as data collection was completed and the data were ready for analysis.

Incentives

CHWs who are respondents of the CHW survey were reimbursed for travel for participating in this study. Since all other data collection took place at the location of the respondent, no other respondents were reimbursed.

Risk to Subjects

All risks to those participating in this study were minimal and no more dangerous than what a participant might experience in his or her daily activities. There were no additional costs to the subjects for participating in this study.

APPENDIX B: ADDITIONAL TABLES

Table 26: Payment of National CHWs

	Bo N=80		Koinadugu N=75		Kono N=75		Moyamba N=76		Tonkolili N=67		Western Area Urban (WAU) N=56		Total N=429	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Paid full incentive including stipend last quarter														
No, not paid	9	11	36	48	42	56	22	29	11	16	12	21	132	31
Yes, paid last quarter and in full	51	64	30	40	21	28	27	36	52	78	31	55	212	49
Yes, paid last quarter but not in full	20	25	9	12	12	16	27	36	4	6	13	23	85	20
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100
Effect on Service Provision														
Unpaid, but providing services	7	9	36	48	42	56	22	29	11	16	12	21	130	30
Unpaid, not providing services	2	3	0	0	0	0	0	0	0	0	0	0	2	1
Paid, fully or partially and providing services	71	89	39	52	33	44	54	71	56	84	44	79	297	69
Total	80	100	75	100	75	100	76	100	67	100	56	100	429	100

Table 27: Payment to TBAs, TB and HIV CHWs

	TBA		TB CHW		HIV CHW	
	n	%	n	%	n	%
Paid full incentive including stipend last quarter						
No, not paid	47	83	36	41	2	8
Yes, paid last quarter and in full	9	16	45	51	9	38
Yes, paid last quarter but not in full	1	2	8	9	13	54
Total	57	100	89	100	24	100
Effect on Service Provision						
Unpaid, but providing services	46	81	35	39	2	8
Unpaid, not providing services	1	2	1	1	0	0
Paid, fully or partially and providing services	10	18	53	60	22	92
Total	57	100	89	100	24	100

Table 28: Satisfaction of National CHWs

	Bo N=80		Koinadugu N=75		Kono N=75		Moyamba N=76		Tonkolili N=67	
	n	%	n	%	n	%	n	%	n	%
Benefits of being a national CHW*										
I know about health	69	86	36	48	75	100	74	97	53	79
I am respected	52	65	67	89	70	93	57	75	60	90
I receive blessings	21	26	61	81	61	81	48	63	40	60
I receive favors at the health facility	22	28	9	12	49	65	37	49	38	57
I help improve the health of people in my village	61	76	62	83	68	91	50	66	38	57
I receive per diems through campaigns	14	18	5	7	51	68	21	28	4	6
I receive an incentive	63	79	2	3	33	44	14	18	19	28
Other benefits	39	49	12	16	9	12	3	4	10	15
None	0	0	4	5	0	0	1	1	1	2
Challenges of being a national CHW*										
I do not regularly receive an incentive	31	39	68	91	56	75	47	62	19	28
I work a lot	20	25	44	59	42	56	54	71	8	12
I do not get supplies and medicines from the PHU regularly	40	50	72	96	45	60	51	67	32	48
People speak badly about me	18	23	9	12	5	7	16	21	18	27
It is difficult to do another job	17	21	22	29	28	37	29	38	8	12
Other challenges	56	70	33	44	29	39	12	16	19	28
No challenges	7	9	0	0	2	3	0	0	15	22

*Multiple response options possible. Percentages may not add to 100%.

Table continued on next page

Satisfaction of National CHWs	Western Area Urban (WAU) N=56		Total N=429	
	n	%	n	%
Benefits of being a national CHW*				
I know about health	52	93	359	84
I am respected	47	84	353	82
I receive blessings	28	50	259	60
I receive favors at the health facility	8	14	163	38
I help improve the health of people in my village	18	32	297	69
I receive per diems through campaigns	1	2	96	22
I receive an incentive	28	50	159	37
Other benefits	6	11	79	18
None	1	2	7	2
Challenges of being a national CHW*				
I do not regularly receive an incentive	15	27	236	55
I work a lot	16	29	184	43
I do not get supplies and medicines from the PHU regularly	23	41	263	61
People speak badly about me	9	16	75	18
It is difficult to do another job	4	7	108	25
Other challenges	32	57	181	42
No challenges	3	5	27	6

*Multiple response options possible. Percentages may not add to 100%

Table 29: Household Satisfaction with Services

	TBA☐		National CHW ☐				TB CHW	
			Sick child visits		Well child visits			
	n	%	n	%	n	%	n	%
Satisfaction with Services Received								
Very satisfied/Excellent	13	87	64	81	46	74	15	88
Satisfied/Good	1	7	15	19	16	26	2	12
Not satisfied/Poor	1	7	0	0	0	0	0	0
Very Unsatisfied/Very Poor	0	0	0	0	0	0	0	0
Total	15	100	79	100	62	100	17	100

Table 30: Financial Cost of National CHWs by District, July 2018-June 2019 (million Leones)

	Bo	Bombali	Bonthe	Kailahun	Kambia	Kenema	Koinadugu	Kono	Moyamba	Port Loko	Pujehun	Tonkolili	WAR	WAU
Funder/Routed	GF/ UNICEF	GAVI/ UNICEF	DFID until 9/2018	WB/ IHPAU	IrishAid/ UNICEF	GF/ UNICEF	WB/ IHPAU	GAVI/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF
Implementer	DHMT	DHMT	CUAMM	DHMT	DHMT	GOAL	DHMT	IRC	GOAL	Concern	CUAMM	Concern	Concern	Concern
Service Delivery														
CHW Incentive	1,186	1,210	262	1,200	996	1,451	1,319	1,114	1,112	1,433	1,110	1,462	594	594
CHW Transport	700	714	154	708	588	856	778	657	656	845	655	862	350	350
PS Incentives	198	202	38	180	162	196	196	174	167	216	167	221	99	97
Transport	132	134	26	120	108	131	131	116	112	144	112	148	66	65
Sub-Total	**2,217**	**2,259**	**480**	**2,208**	**1,854**	**2,634**	**2,424**	**2,061**	**2,048**	**2,638**	**2,044**	**2,693**	**1,109**	**1,104**
Training														
TOT	14.1	14.4	12.4	14.3	11.8	17.2	15.7	13.2	13.2	17.0	13.2	17.4	7.1	7.0
District	782.8	797.8	681.7	783.5	655.3	938.8	860.4	730.1	726.5	936.0	725.1	955.2	391.8	390.3
NGO Training					**473.8**									
Sub-Total	**796.9**	**812.1**	**694.4**	**798.3**	**1,141**	**956.0**	**876**	**743.3**	**739.8**	**953**	**738.3**	**972.5**	**398.8**	**397**
Materials and Oversight														
Medicines	3,536	3,418	1,037	2,970	2,527	3,899	2,456	2,531	1,213	1,986	2,399	2,699	1,885	2,613
Materials & Equipment														
CHW	558	568	492	564	468	682	620	523	523	673	522	687	279	279
PS	164	167	126	149	134	162	162	144	138	179	138	183	82	80
Supervision	43.6	44.4	38.4	44.1	36.6	53.3	48.4	40.9	40.8	52.6	40.7	53.7	21.8	21.8
Management														
National	231.8	236.2	204.0	234.3	194.5	283.3	257.5	217.5	217.2	279.8	216.8	305.6	116.0	115.8
NGO	NA	NA	NA	NA	701.6	NA	NA	1,746	NA	5.3	67.5	10.5	2.6	NA
Total	**7,546**	**7,505**	**3,072**	**6,964**	**7,059**	**8,669**	**6,844**	**8,008**	**4,923**	**6,766**	**6,100**	**7,497**	**3,855**	**4,573**
Total w/o Medicine	**4,011**	**4,087**	**2,035**	**3,994**	**4,532**	**4,770**	**4,388**	**5,477**	**3,710**	**4,781**	**3,701**	**4,797**	**1,970**	**1,960**
Grand Total	**89.61 billion Leones ($9.5 million) with medicine/ 54.44 billion Leones ($5.8 million)**													

Table 31: Cost per Service for National CHWs by District, July 2018-June 2019 (thousand Leones)

	Bo	Bombali	Bonthe	Kailahun	Kambia	Kenema	Koinadugu	Kono	Moyamba	Port Loko	Pujehun	Tonkolili	WAR	WAU
Funder/Routed	GF/ UNICEF	GAVI/ UNICEF	DFID until 9/2018	WB/ IHPAU	IrishAid/ UNICEF	GF/ UNICEF	WB/ IHPAU	GAVI/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF	GF/ UNICEF
Implementer	DHMT	DHMT	CUAMM	DHMT	DHMT	GOAL	DHMT	IRC	GOAL	Concern	CUAMM	Concern	Concern	Concern
Indicators and Cost per Indicator														
# CHWs Trained	989	1,008	872	1,000	830	1,209	1,099	928	928	1,194	925	1,218	495	494
# Cases of child illness seen (fever, ARI, diarrhea)	49,285	71,191	15,995	38,685	38,820	45,822	33,329	38,951	16,115	27,933	30,966	32,604	25,051	27,697
# Febrile children tested with RDT	42,151	40,455	12,335	36,969	27,247	42,945	30,277	28,975	13,994	25,567	26,352	28,801	22,448	24,862
# Cases of child illness treated (ACT, ORS &/or zinc, antibiotic)	32,530	61,095	10,629	22,482	30,396	33,624	20,246	26,357	11,296	15,370	23,530	25,880	15,521	26,480
# Children screened for malnutrition	54,066	48,592	22,259	41,802	19,429	56,404	29,114	25,841	42,935	54,151	16,149	30,918	37,995	29,769
Cost per CHW trained	7,630.3	7,445.4	3,522.9	6,964.2	8,504.8	7,170.4	6,227.2	8,629.1	5,305.5	5,667.1	6,594.9	6,154.8	7,788.3	9,257.7
Cost per CHWs trained (w/out medicines)	4,055.1	4,054.6	2,333.3	3,994.3	5,459.7	3,945.6	3,992.5	5,902.0	3,998.0	4,003.8	4,001.0	3,938.6.	3,980.8	3,967.3
Cost per case child illness seen	61.2	42.2	76.8	72.0	72.7	75.7	82.1	82.2	122.2	96.9	78.8	93.0	62.2	66.6
Cost per case of febrile child	35.8	37.1	49.8	37.7	51.8	40.4	45.2	55.3	70.4	52.9	46.3	52.1	34.3	36.8
Cost per case of child illness treated	92.8	49.2	115.6	123.9	92.9	103.1	135.2	121.5	174.3	176.1	103.7	115.9	99.3	69.1
Cost per child screening for malnutrition	55.8	61.8	55.2	66.6	145.3	61.5	94.0	124.0	45.9	50.0	151.1	97.0	40.6	61.4

Table 32: Financial Cost of TB CHWs by District, July 2018-June 2019 (million Leones)

	Bo	Bombali	Bonthe	Kailahun	Kambia	Kenema	Koinadugu	Kono	Moyamba	Port Loko	Pujehun	Tonkolili	WAR	WAU
Number of TB CHWs	101	136	31	79	92	75	88	110	81	91	61	81	56	127
Service Delivery														
CHW Incentive	181.8	244.8	55.8	142.2	165.6	135.0	158.4	198.0	145.8	163.8	109.8	145.8	100.8	228.6
Training														
TOT	2.1	2.9	0.7	1.7	1.9	1.6	1.9	2.3	1.7	1.9	1.3	1.7	1.2	2.7
District	175.0	235.6	53.7	136.9	159.4	130.0	152.5	190.6	14030	157.7	106.0	140.3	97.0	220.0
Sub-Total	**177.2**	**238.5**	**54.4**	**138.5**	**161.3**	**131.5**	**154.3**	**192.9**	**142.0**	**159.6**	**107.0**	**142.0**	**98.2**	**222.7**
Materials (includes equipment)	32.8	44.2	10.1	25.6	29.9	24,3	28,6	35.7	26.3	29.5	19.8	26.3	18.2	41.2
Supervision	9.9	13.3	3.0	7.7	9.0	7.4	8.6	10.8	7.9	8.9	5.9	7.9	5,5	12.5
Total	**401.6**	**540.8**	**123.3**	**314.1**	**365.8**	**298.2**	**349.9**	**437.4**	**322.1**	**361.8**	**242.6**	**322.1**	**222.7**	**505.0**
Grand Total	**4,807.4 million Leones ($511,434)**													
Cost per Indicator by District (thousand Leones)														
Cost per TB CHW Trained	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4	3,976.4
No. of referrals by CHWs	1,563	1,230	42	1,134	1,211	1,505	927	1,289	1,035	1,040	731	962	852	1,899
No. of cases of LTFU traced by CHWs	109	105	16	169	94	120	0	15	0	64	15	105	59	413
Cost per referral by CHW	231.3	395.7	2,641.5	249.3	271.9	178.3	339.7	305.4	280.1	313.1	298.6	301.3	235.2	239.3
Cost per case of LTFU traced	368.5	515.0	770.4	185.9	389.2	248.5	N/A	2,916.0	N/A	565.4	1,617.1	306.8	377.4	122.3

Note: Analysis assumes that 90% of the TB CHW time went towards referrals by CHWs and 10% of time for cases of LTFU traced by CHWs. Note: No medicines were included since the TB CHWs do not distribute any medicines.

Table 33: Financial Costs of HIV CHWs by District, July 2018-June 2019 (million Leones)

	Bo	Bombali	Kenema	Port Loko	Tonkolili	WAR	WAU	Total
Number of HIV CHWs	40	40	40	40	40	40	40	280
CHW Incentive	90	90	90	90	90	90	90	630
Supervisors	6.3	6.3	6.3	6.3	6.3	6.3	6.3	44.1
Training								
ToT	5.1	5.1	5.1	5.1	5.1	5.1	5.1	35,8
District	11.4	11.4	11.4	11.4	11.4	11.4	11.4	79.6
Sub-Total	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**115.4**
Management	9.0	9.0	9.0	9.0	9.0	9.0	9.0	62.8
Total	**121.7**	**121.7**	**121.7**	**121.7**	**121.7**	**121.7**	**121.7**	**852.3**
Grand Total	**852.3 million Leones ($90,668)**							
Cost per HIV CHW trained	2.9	2.9	2.9	2.9	2.9	2.9	2.9	20.3
Cases of LTFU followed up by CHWs	2,833	622	173	129	311	548	2,216	6,832
Case of defaulters and LTFU brought back to care	685	61	24	49	198	0	0	1,017
Cost per case of LTFU followed up by CHWs (000s Leones)	43.0	195.7	703.8	943.8	391.5	222.2	54.9	124.7
Cost per case of defaulters and LTFU brought back to care after follow-up (000s Leones)	177.7	1,996.0	5,073.1	2,484.8	614.9	NA	NA	838.0

Note: No medicines were included since the HIV CHWs do not distribute any medicines. Financial cost of supervision for HIV CHWs is only from the peer supervisors

Table 3416: Financial Cost of Malaria TBAs by District, July 2018-June 2019 (000s Leones)

	Bo	Bombali	Bonthe	Kailahun	Kambia	Kenema	Koinadugu	Kono	Moyamba	Port Loko	Pujehun	Tonkolili	WAR	WAU
# of CHWs	151	130	90	113	154	224	96	165	140	200	150	125	61	15
Service Delivery														
CHW Incentive	181,200	156,000	108,000	135,600	184,800	268,800	115,200	198,000	168,000	240,000	180,000	150,000	73,200	18,000
Training	15,881.9	13,673.2	9,466.0	11,885.1	16,197.4	23,559.9	10,097.1	17,354.4	14,725.0	21,035.6	15,776.7	13,147.3	6,415.9	1,577.7
Medicines	10,213.1	3,909.5	2,820.0	5,283.7	2,661.1	11,395.6	2,939.4	2,524.8	2,724.1	12,097.8	6,239.7	3,074.7	6,360.0	5,225.5
Materials	4,973.3	4,281.7	2,964.2	3,721.8	5,072.1	7,377.7	3,161.8	5,434.4	4,611.0	6,587.2	4,940.4	4,117.0	2,009.1	494.0
Management	83,025.6	71,479.0	49,485.4	62,131.7	84,675.1	123,163.8	52,784.5	90,723.3	76,977.3	109,967.6	82,475.7	68,729.8	33,540.1	8,247.6
Total	**295,294**	**249,343**	**169,919**	**218,622**	**293,406**	**434,297**	**184,183**	**314,037**	**267,037**	**389,688**	**289,433**	**239,069**	**121,525**	**33,545**
Grand Total (million Leones)	**3.5 million Leones (372,276 Leones)**													
# Services Provided and Cost per Service (Leones)														
Cost per Malaria TBA trained	1,955.6	1,918.0	1,888.0	1,934.7	1,905.2	1,938.8	1,918.6	1,903.3	1,907.4	1,948.4	1,929.6	1,912.6	1,992.2	2236.3
Cost per Malaria TBA trained (w/out medicines)	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0	1,888.0
# IPTp distributed to pregnant women	10,865	4,159	3	5,621	2,831	12,123	3,127	2,686	2,898	12,870	6,638	3,271	6,766	5,559
Cost per dose of IPTp to pregnant women	27,178	59,953	73,959	38,894	103,640	35,824	58,901	116,916	92,145	30,279	43,602	73,087	17,961	6,034

APPENDIX C: INFORMED CONSENT FOR PARTICIPANTS

Information Sheet – CHW Survey

Sierra Leone CHW Assessment and Evaluation

Who is carrying out this study?

John Snow Inc. (JSI) in collaboration with the Ministry of Health and Sanitation (MoHS) organizations – Directorate of primary Health Care (DPHC) and the Community Health Worker (CHW) Hub, National AIDS Control Programme (NACP), National Leprosy and Tuberculosis Control Programme (NLTCP), and the National Malaria Control Programme (NMCP) is conducting this evaluation of the CHW Program in Sierra Leone. JSI is working with Focus 1000 for to conduct data collection.

What is the purpose of this study?

The purpose of the study is to collect relevant information from community members, CHW beneficiary households, and stakeholders of Sierra Leone's CHW program at different levels including CHWs, supervisors, facility in- charges, DHMT, national level programs overseeing CHWs and donors and implementing partners to assess the CHW reporting system, quality of CHW service provision, and cost efficiency of CHW programs.

What happens in this study?

As part of this study, you will respond to a survey about 30-45 minutes long covering topics related to your work as a CHW. The interview will be conducted by a two person data collection team. The team will note all responses on a tablet. You may be shown a short video followed by some questions to respond to. Your name or personal information will not be linked to the data collected or identified in any way.

What are the benefits of being in this study?

There is no direct benefit to you for participating in this study. There is no financial benefit for your participation in this interview. But the answers provided will help Sierra Leone's CHW program understand the role and needs of CHWs so they are able to provide better services to the community in all districts in the country.

You will receive a transport stipend for attending the interview.

Who should I call if I have questions?

Please contact the following persons for any additional information on this study

Soumya Alva
Senior Evaluation Advisor
John Snow Inc.
2733 Crystal Dr. 4th floor
Arlington, VA, USA
Tel: +1703 528 7474
Email: Soumya_alva@jsi.com

Paul Sengeh
Director of Research and Evaluation
FOCUS 1000
7E Conteh Drive. Off Old Railway Line, Tengbeh Town
Freetown, Sierra Leone
Mobile: +232 (0) 76-626-543
Email: psengeh@gmail.com, psengeh@yahoo.com

Can I refuse to be part of the study?

BEING IN THE STUDY IS UP TO YOU. YOU CAN SAY NO NOW, OR LEAVE THE STUDY AT ANY TIME LATER. YOU CAN REFUSE TO ANSWER ANY QUESTION ASKED.

Signature of Interviewer (for verbal consent):

_____

Information Sheet – CHW Beneficiary Household Survey

Sierra Leone CHW Assessment and Evaluation

Who is carrying out this study?

John Snow Inc. (JSI) in collaboration with the Ministry of Health and Sanitation (MoHS) organizations – Directorate of primary Health Care (DPHC) and the Community Health Worker (CHW) Hub, National AIDS Control Programme (NACP), National Leprosy and Tuberculosis Control Programme (NLTCP), and the National Malaria Control Programme (NMCP) is conducting this evaluation of the CHW Program in Sierra Leone. JSI is working with Focus 1000 for to conduct data collection.

What is the purpose of this study?

The purpose of the study is to collect relevant information from community members, CHW beneficiary households, and stakeholders of Sierra Leone's CHW program at different levels including CHWs, supervisors, facility in- charges, DHMT, national level programs overseeing CHWs and donors and implementing partners to assess the CHW reporting system, quality of CHW service provision, and cost efficiency of CHW programs.

What happens in this study?

As part of this study, you will respond to a survey about the services you recently received from a CHW. The survey will be about 30-45 minutes long and is being conducted by a two person data collection team. The team will note all responses on a tablet. Your name or personal information will not be linked to the data collected or identified in any way.

What are the benefits of being in this study?

There is no direct benefit to you for participating in this study. There is no financial benefit for your participation in this interview. But the answers provided will help Sierra Leone's CHW program understand the role and needs of CHWs so they are able to provide better services to the community in all districts in the country.

Who should I call if I have questions?

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Signature of Interviewer (for verbal consent):

_____

Information Sheet – In-depth Interviews

Sierra Leone CHW Assessment and Evaluation

Who is carrying out this study?

John Snow Inc. (JSI) in collaboration with the Ministry of Health and Sanitation (MoHS) organizations – Directorate of primary Health Care (DPHC) and the Community Health Worker (CHW) Hub, National AIDS Control Programme (NACP), National Leprosy and Tuberculosis Control Programme (NLTCP), and the National Malaria Control Programme (NMCP) is conducting this evaluation of the CHW Program in Sierra Leone. JSI is working with Focus 1000 for to conduct data collection.

What is the purpose of this study?

The purpose of the study is to collect relevant information from community members, CHW beneficiary households and stakeholders of Sierra Leone's CHW program at different levels including CHWs, supervisors, facility in- charges, DHMT, national level programs overseeing CHWs and donors and implementing partners to assess the CHW reporting system, quality of CHW service provision, and cost efficiency of CHW programs.

What happens in this study?

As part of this study, you will respond to questions from a semi-structured interview guide for about 30-45 minutes about the role of CHWs providing health services in the community and procedures they follow. The interview will be conducted by a two person data collection team. The team will audio-record the discussion and note all responses in writing. Your name or personal information will not be linked to the data collected or identified in any way.

What are the benefits of being in this study?

There is no direct benefit to you for participating in this study. There is no financial benefit for your participation in this interview. But the answers provided will help Sierra Leone's CHW program understand the role and needs of CHWs so they are able to provide better services to the community in all districts in the country.

Who should I call if I have questions?

Please contact the following persons for any additional information on this study

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Signature of Interviewer (for verbal consent):

_____

Information Sheet – Focus Group Discussions

Sierra Leone CHW Assessment and Evaluation

Who is carrying out this study?

John Snow Inc. (JSI) in collaboration with the Ministry of Health and Sanitation (MoHS) organizations – Directorate of primary Health Care (DPHC) and the Community Health Worker (CHW) Hub, National AIDS Control Programme (NACP), National Leprosy and Tuberculosis Control Programme (NLTCP), and the National Malaria Control Programme (NMCP) is conducting this evaluation of the CHW Program in Sierra Leone. JSI is working with Focus 1000 for to conduct data collection.

What is the purpose of this study?

The purpose of the study is to collect relevant information from community members, CHW beneficiary households, and stakeholders of Sierra Leone's CHW program at different levels including CHWs, supervisors, facility in- charges, DHMT, national level programs overseeing CHWs and donors and implementing partners to assess the CHW reporting system, quality of CHW service provision, and cost efficiency of CHW programs.

What happens in this study?

As part of this study, you will participate in a focus group discussion based on a semi-structured guide for about 30-45 minutes. The discussion will cover topics relating to the role of CHWs providing health services in the community and procedures they follow and will be conducted by a two person data collection team including a facilitator and note taker. The team will audio-record the discussion and note all responses in writing. Your name or personal information will not be linked to the data collected or identified in any way. You will be provided transport reimbursement for participating in the discussion.

What are the benefits of being in this study?

There is no direct benefit to you for participating in this study. There is no financial benefit for your participation in this interview. But the answers provided will help Sierra Leone's CHW program understand the role and needs of CHWs so they are able to provide better services to the community in all districts in the country.

Who should I call if I have questions?

Please contact the following persons for any additional information on this study

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Signature of Interviewer (for verbal consent):

APPENDIX D - OVERVIEW OF OTHER CHW PROGRAMS

Below is an overview of four large-scale, public sector CHW programs in sub-Saharan Africa and Asia.

Ethiopia

The first health extension workers (HEWs) were trained in 2004 and the cadre was expanded in the following years as part of Ethiopia's progress towards achieving universal health coverage. Human resources that now serve at the community level in Ethiopia include HEWs, voluntary CHWs, and community health promoters (CHPs), now called "health development army" (HDA) volunteers.[3]

Roles and Responsibilities	The role of the HEWs is to increase the utilization of primary health services. The role is considered part-time work with their time split between health posts and the community. Responsibilities of HEWs include health promotion, disease prevention, treatment of simple illnesses including malaria, pneumonia, diarrhea, and malnutrition at the community level. Expectations of HEWs have evolved over the implementation of the program. Originally, the program intended for them to spend at least 75% of their time focused on community outreach activities.[4][5] However, more recent guidelines suggest that HEWs should spend 50% of their time providing support at the health posts.[6]
Eligibility and Training	HEWs are required to be females who have completed 10th-grade education while HDA volunteers can be male or female, must be over 15 years of age, and are, preferably, literate. HEWs receive one year of preservice training.[7] Training includes didactic and training modules, including: (1) family health services, (2) disease prevention and control, (3) hygiene and environmental sanitation, and (4) health education and communication.[8] In addition to preservice training, HEWs further receive a one-time month-long in-service training before they begin their service.
Incentives	HEWs are considered formal employees of the health system and are paid a salary. HDA volunteers do not receive monetary compensation but do receive other incentives such as certificates, mentorship, and recognition with the community.
Supervision	Supervision is conducted by the *woreda* (district) supervisory team, which comprises a health officer, a public health nurse, an environmental/hygiene expert, and a health education expert. In 2005, HEWs had an average of three supervisory visits over the course of 9 months.

[3] Case Studies of Large-Scale Community Health Worker Programs: Examples from Afghanistan, Bangladesh, Brazil, Ethiopia, Niger, India, Indonesia, Iran, Nepal, Pakistan, Rwanda, Zambia, and Zimbabwe
[4] Admassie A, Abebaw D, Woldemichael AD. Impact evaluation of the Ethiopian Health Services Extension Program. Journal of Development Effectiveness. 2009;1(4):430-449.
[5] Koblinsky M, Tain F, Gaym A, Karim A, Carnell M, Tesfaye S. Responding to the maternal health care challenge: the Ethiopian health extension program. Ethiopian Journal of Health Development. 2010;24(1):105-109.
[6] Sime K. Ethiopia's Health Extension Program. USAID CHW Regional Meeting; 2012; Addis Ababa, Ethiopia.
[7] Liu A, Sullivan S, Khan M, Sachs S, Singh P. Community health workers in global health: scale and scalability. Mt Sinai J Med. 2011;78(3):419-435.
[8] Dynes M, Buffington ST, Carpenter M, et al. Strengthening maternal and newborn health in rural Ethiopia: early results from frontline health worker community maternal and newborn health training. Midwifery. 2013;29(3):251-259.

Malawi

Health surveillance assistants (HSAs) are the main professionalized cadre of CHWs in Malawi. The HSA program was developed in response to the shortage of health workers in the country and provide an essential link between the formal health system and the community.[9] Other cadres of volunteer CHWs do exist, and these groups are supervised by HSAs. These include community-based distributing agents (CBDAs), community home-based care providers, growth monitoring visitors, sanitation promoters, community groups, peer educators, and members of village health committees. The HSA program coordinates the delivery of primary care services at the community level. These services include environmental health, family planning, maternal and child health, HIV/AIDS, integrated management of child illness (IMCI), and sanitation. As of 2013, Malawi had over 10,000 HSAs active in both urban and rural regions of the country. One HSA is meant to serve 1,000 people. To achieve this, HSAs are provided a bicycle in order to reach clients.

Roles and Responsibilities	HSAs focus on a range of services including hygiene and sanitation, immunizations, growth monitoring, antenatal care, family planning, disease surveillance, community assessments, and basic preventative and curative health services. Some HSAs deliver the full package of iCCM, TB, HIV, and family planning services. CBDAs provide family planning services but are not allowed to administer injectable contraceptives. Village health committees focus primarily on health promotion and community mobilization as needed.
Training	HSAs receive a 12-week basic training course that includes health education, common disease identification and treatment (including iCCM), vaccination, sanitation, etc. Select HSAs can also be trained for additional services such as the administration of contraceptives, TB treatment, and HIV testing and counseling. In addition to preservice training, HSAs can also receive on-the-job training and orientation as well as periodic refresher trainings. CBDAs receive a two-week training prior to initiating service, and village health committees receive a five-day training on health promotion.
Incentives	HSAs in Malawi receive a government-paid salary of about $100 per month. CBDAs are considered volunteers and therefore do not receive a salary; however, some NGOs do provide them with monthly stipends. Members of the village health committees are also have a volunteer status and do not receive any monetary incentives for their work.
Supervision	HSAs are formally supervised by assistant environmental health officers. More recently, the position of senior HSA was created, and these HSAs have taken on many of the supervision duties for the HSA cadre. NGOs also provide supervision in some areas. HSAs, in turn, provide supervision to members of the village health committees and CBDAs. This supervision is intended to occur on a monthly basis

[9] Strengthening Primary Health Care through Community Health Workers: Investment Case and Financing Recommendations

Nepal

Nepal's first National Health Sector Program (NHSP) was implemented in 2004 and worked to provide equitable access to free basic health services. The second NHSP, established in 2010, sought to increase access to and utilization of essential health care services, reduce barriers to accessing health services, and improve the health system in order to achieve universal coverage of health services. These efforts included services provided by the three cadres of CHWs in the country: maternal child health workers (MCHWs), village health workers (VHWs), and female community health volunteers (FCHVs)[10].

All three cadres are based out of health facilities that serve catchment populations of about 5,000 to 10,000 people. Each health facility has one professional health worker, one VHW, one MCHW, and at least nine FCHVs.[11] Each of the three types of CHWs has a defined scope of work. The MCHWs are full-time employees who offer reproductive services for women. The VHWs are also full-time workers, and they offer family-oriented services such as immunizations and management of newborn infections. The FCHVs are part-time volunteers who provide basic services and health education.

Roles and Responsibilities	FCHVs are frontline, part-time service providers who work an average of 8 hours each week.[12] They are predominately volunteers but do receive some financial compensation for certain functions. They promote healthy behaviors through health education and also mobilize communities for immunization, detect and treat common childhood illnesses, provide medications for DOT for TB, treat diarrhea and pneumonia, and distribute family planning commodities. They are also currently being trained to place antiseptic on umbilical cords immediately after birth as well as to resuscitate newborns who have asphyxia during birth.[13] MCHWs work full time and provide services such as family planning, treatment of outreach clinic patients, case management of childhood illnesses, health promotion and education, and participation in campaigns for immunization and vitamin A. They further provide referrals and supervise FCHVs.[9] VHWs are full-time workers who provide similar services to those of MCHWs[12] including provision of immunizations, management of newborn infections, and supervision of FCHVs.
Eligibility and Training	FCHVs are women 25 to 45 years of age who are married with children. Ideally they should be literate, though it is not required, and it preferred that they live in the community that they serve. MCHWs are women who are required to have at least a 10th-grade education and must reside within the community that they serve. VHWs can be male or female who live within the community they serve and are required to be able to read and write. An 18-day training prior to the start of their service is provided to all FCHVs. They are further provided a 5-day refresher training every 5 years after that[12]. MCHWs and VHWs both have an initial training of about 3 months[14].

[10] Case Studies of Large-Scale Community Health Worker Programs: Examples from Afghanistan, Bangladesh, Brazil, Ethiopia, Niger, India, Indonesia, Iran, Nepal, Pakistan, Rwanda, Zambia, and Zimbabwe

[11] CHW Technical Task Force. One Million Community Health Workers: Technical Task Force Report. New York, NY: The Earth Institute; 2011. Available at: http://www.millenniumvillages.org/uploads/ ReportPaper/1mCHW_TechnicalTaskForceReport.pdf.

[12] Shresta A. The female community health volunteers of Nepal. Global Health Evidence Summit: Community and Formal Health System Support for Enhanced Community Health Worker Performance. 2012; Washington, DC.

[13] Ministry of Health and Population, Government of Nepal. Nepal Health Sector Programme - Implementation Plan II (NHSP -IP 2) 2010 – 2015. 2010.

[14] CHW Technical Task Force. One Million Community Health Workers: Technical Task Force Report. New York, NY: The Earth Institute; 2011. Available at: http://www.millenniumvillages.org/uploads/ReportPaper/1mCHW_TechnicalTaskForceReport.pdf.

Incentives	MCHWs and VHWs are formally employed and paid by the government for their services, which is approximately $140 per month. Initially, FCHVs were paid a monthly stipend, but this was not sustainable and the stipend was discontinued. Motivating factors for FCHVs currently include nonfinancial incentives like a clothing allowance and community recognition. FCHVs also receive an incentive for retiring at the age of 60 as well as free services from Nepal's Ex-Servicemen Contributory Health Scheme, which provides medical insurance for all ex-service personnel eligible for pension, as well as the service person's spouse and dependent children.[15]
Supervision	VHWs and MCHWs supervise the FCHVs who work in their catchment areas. VHWs and MCHWs are further responsible for resupplying the FCHVs and for providing support, advice, and feedback during monthly supervision visits.

[15] Glenton C, Scheel IB, Pradhan S, Lewin S, Hodgins S, Shrestha V. The female community health volunteer programme in Nepal: decision makers' perceptions of volunteerism, payment and other incentives. Soc Sci Med. 2010;70(12):1920-1927.

Rwanda

Rwanda's CHW program was established in 1995 with the aim of increasing the uptake of maternal and child health services through education, health promotion, follow-up visits, and establishing linkages between the health services and the community.[16] Rwanda has an estimated 45,000 CHWs working at the community level. Each village has three CHWs to provide services: a male-female CHW pair (called *binômes*) providing basic care and iCCM of childhood illness, and a CHW in charge of maternal health, called an ASM (*Agent de Sante Maternelle*).[16]

From 2008 to 2011, iCCM of childhood illnesses was introduced nationwide. *Binômes* were trained and equipped to provide iCCM (including treatment with antibiotics, zinc, and antimalarials), to detect cases of acute illness in need of referral, and to submit monthly reports. Additionally, in 2010, Rwanda introduced family planning as a component of the national community health policy. In response, CHWs were trained to counsel and provide contraceptive methods, including pills, injectables, cycle beads, and condoms.

Roles and Responsibilities	Three CHWs operate in each village and cover approximately 100 to 150 households. ASMs identify pregnant women in the community and make regular visits to them during pregnancy as well as ensure that deliveries are made at the facility or attended by a skilled provider. *Binômes* provide iCCM (assessment, classification, and treatment or referral of diarrhea, pneumonia, malaria, and malnutrition in children younger than 5 years of age), community-based provision of contraceptives, DOT for TB, prevention of noncommunicable diseases, and preventive and behavior change activities.
Eligibility and Training	CHWs in Rwanda are between the ages of 20 and 50 years old, must be literate, and live in the village that they will serve. They must be elected by their village members and considered to be honest, reliable, and trustworthy.[16] *Binômes* are trained in community-based IMCI, positioning them to be first responders to a number of common childhood illnesses, including pneumonia, diarrhea, and malaria. The CHWs are also trained on when and how to refer severe cases to the facility. IMCI refresher training is provided through a supportive supervision model, where the supervisor conducts training to strengthen the CHW's knowledge and skills in providing quality case management services in their communities[17].
Incentives	CHWs in Rwanda are considered to be volunteers but do benefit from a community performance-based financing scheme which was established to help motivate CHWs. Through this mechanism, CHWs receive and share funds based on achieving specific targets set by the Ministry of Health.[18]
Supervision	Coordinators visit CHWs to monitor activities, check their supplies, and compile data collected by CHWs on a quarterly basis. These supervision visits include the observation of home visits and verification of data collected by the CHW.

[16] Rwanda Ministry of Health. National Community Health Strategic Plan July 2013–June 2018.
[17] Rwanda Ministry of Health. Trainer's Guide: "Integrated Management of Child Illness," "Community Case Management." 2011.
[18] Rusa L, Schneidman M, Fritsche G, Musango L. Rwanda: Performance-Based Financing in the Public Sector. 2009.

APPENDIX E - SIERRA LEONE: SCENARIOS FOR NUMBER OF NATIONAL CHWS TO ADEQUATELY DELIVER SERVICES

Introduction

As mentioned in the discussion section of the report, the number of CHWs covering the population (target population size) depends on many factors, such as disease epidemiology, geography, population distribution, scope and type of work, remuneration, etc. (WHO 2018). There is no one-size-fits all recommendation and the MOHS and its partners need to consider available data and calculations to make difficult decisions about what to prioritize, especially in contexts with resource constraints. Additionally, once the MOHS and partners make decisions about CHW deployment and catchment populations, these recommendations should be operationalized at the sub-national levels (i.e. district or chiefdom), where there is local knowledge of the logistical constrains, terrain (i.e. hard-to-reach areas due to rivers, mountains and other geographical characteristics, etc), and local needs. For example, we use cut-offs of more than three and more than five kilometers from a health facility to indicate hard-to-reach areas, but there are other logistical constraints that may make a community hard-to-reach.

In response to requests from the MOHS and the Global Fund in association with the assessment of the national CHW program in 2019, we present various scenarios of how many CHWs may be deployed to provide different service packages in different geographic areas. We have used information about the CHW workload and population distribution to calculate the catchment areas and overall number of CHWs in each scenario, described below. We strongly recommend that the MOHS and its partners build on these data and scenarios with district-level planning and additional geo-spatial data and analysis available from UNICEF that also considers travel time to primary health units (PHU).

Methods

CHW Workload: We used the Community Health Worker Coverage and Capacity Tool[19] (C3 tool) to estimate the workload of CHWs in relation to the tasks they are supposed to carry-out. In our estimations, we included the following tasks of the national CHWs:

- Family Planning (FP): provision of condoms and pills
- Maternal and Child Health (MCH): Antenatal care (ANC) and postnatal care (PNC) visits, referral for newborn or maternal complications
- Behavior Change Communication (BCC): household visits on a quarterly basis (including screening for malnutrition)
- Nutrition: Infant and Young child feeding (IYCF) counseling visits (4 per year in 1st year of life), follow-up on cases of Moderate Acute (MAM) and Severe Acute Malnutrition (SAM)
- Integrated Community Case Management (iCCM): including assessment and treatment of childhood diarrhea, pneumonia and malaria, diagnosis and treatment of adult malaria, referral and follow-up of cases

[19] https://www.mcsprogram.org/resource/community-health-worker-coverage-and-capacity-tool/

- Reporting/surveillance: weekly surveillance reporting, maternal and child death audits and birth registration

In our scenarios, we only varied whether the CHW would provide iCCM services (i.e. not providing these services close to a PHU). However, national policy makers could decide to vary the tasks assigned to CHWs. For example, household visits account for a large proportion of the CHWs' working time and could be reduced to twice a year. The C3 tool requires inputs on the time necessary to carry out each task; we used assumptions that were available from a previous application of the C3 tool in Sierra Leone in 2017 with support from MCSP and ICF. The assumptions used for time for each task are in the C3 tool attachments. The tool also takes into consideration time for routine reporting and administrative tasks, as well as travel time. For volunteer CHWs we use the assumption of 15 working hours every week for 50 weeks. For full-time, salaried professional CHWs, we estimated 40 hours working 50 weeks a year. For CHWs further than 3 km from a health facility, we estimated the average travel time between households as 10 minutes; for CHWs within 3km of a health facility, we estimated average travel time between households as 5 minutes.

Estimates of the Population Within and Beyond 3 and 5 km of a PHU: We used secondary analysis done by Nicholas Oliphant provided at the request of UNICEF on Dec 2019 for the estimates of the population within and beyond three and five kilometer radius of PHUs. These estimates were developed using health facility locations and georeferenced population estimates. The health facility locations were extracted from the master facility list developed in 2016 that was based on the 2015-2016 georeferenced PHU census supported by UNICEF and other partners, the 2015 health facility assessment (census) supported by UNICEF and a 2016 health facility assessment (census) by CHAI in 2016. The population estimates used in the calculation were from the High Resolution Settlement Layer (HRSL) by CEISIN, adjusted to the 2015 census data at district level (https://www.ciesin.columbia.edu/data/hrsl/). We then applied the district-level growth rates to project the expected populations in 2020.[20]

Calculations: We used the C3 tool to determine an appropriate catchment areas population for a CHW to complete 100% tasks within the time available for activities in each of the different scenarios. For each scenario, we then combined the catchment area results with the population estimates for given geographies (i.e. within or beyond 3 km of PHUs) to determine the approximate number of CHWs needed per district and overall. Our results are approximations. The catchment area of each CHW will vary given community sizes and geography, thus the overall number of CHWs needed for each scenario is an approximation and will vary slightly when a chosen scenario is operationalized.

Results for Different Scenarios

Here we present a range of options for different scenarios of using CHWs to expand services. These estimates are based on different data and many assumptions, but they provide the range of options and an idea about the level of changes (more or fewer CHWs) compared to the current CHW deployment.

[20] We applied the district population growth rate evenly across all areas (i.e. > 5km and < 5 km) due to the availability of this estimate. Our assumption that population growth is the same in areas closer and farther from a PHU is likely not true, but more detailed data do not exist to our knowledge.

Scenario 1: Current National Policy for CHW Deployment

For this scenario, we have applied the national CHW policy recommendations that CHWs residing in communities <3km from a PHU have a catchment area of 1,000 people, while CHWs residing in communities >3km from a PHU have a catchment population of 250 people and perform the same tasks specified in the national policy. The tables below provide a summary, the advantages and disadvantages and the approximate number of CHWs needed by district if the national recommendations for catchment areas were applied.

Scenario 1: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs
>3km from PHU	Volunteer CHW with stipend	Not specified	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	1,000 pop / ~170 HHs	8,698
<3 km from PHU	Volunteer CHW with stipend	Not specified	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	250 pop / ~ 43 HHs	6,192

*Catchment area based on national policy recommendations

Scenario 1: Advantages and Disadvantages

Advantages	Disadvantages
• Same services provided by CHWs throughout country	• Large number (14,890 total) of CHWs to sustain • Inefficient deployment of CHWs; large management and resource requirements • Population catchment of 1,000 persons in areas <3 km from PHU is too large for volunteer CHWs to complete all tasks, especially quarterly household visits

Scenario 1: Estimated Number of CHWs Needed by District for Scenario 1

	Areas > 3km from a PHU/facility			Areas < 3km from a PHU/facility		
	2020 Estimated population > 3kms from PHU	Estimated number of households (HHs)	Number of CHWs	2020 Estimated population < 3kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	126,762	21,856	507	508,538	87,679	509
Bombali	222,898	38,431	892	500,433	86,282	500
Bonthe	116,561	20,097	466	118,617	20,451	119
Kailahun	173,508	29,915	694	451,584	77,859	452
Kambia	106,783	18,411	427	278,110	47,950	278
Kenema	148,929	25,677	596	517,953	89,302	518
Koinadougou	307,570	53,029	1,230	188,001	32,414	188
Kono	191,669	33,046	767	415,153	71,578	415
Port Loko	147,997	25,517	592	199,976	34,479	200
Moyambo	226,378	39,031	906	479,596	82,689	480
Pujehun	152,566	26,305	610	264,927	45,677	265
Tonkolili	243,370	41,960	973	400,667	69,081	401
Western Rural Area	9,327	1,608	37	660,335	113,851	660
Western Urban Area	294	51	1	1,207,707	208,225	1,208
TOTAL	2,174,613	374,933	8,698	6,191,599	1,067,517	6,192

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Scenario 2: Professional CHWs In Areas > 5km from PHU Provide Full Package of Services and Volunteer CHWs <5km from PHU Provide All Services Except iCCM

In this scenario, professional CHWs would be recruited, deployed, and paid full-time to work in hard to reach areas defined as >5km from a PHU. These CHWs would be able to cover a larger population (around 1000 people) because they would work full time. The CHWs in areas <5km from PHUs covering a population of 850 would provide all the services, except iCCM, because treatment can be accesses at the PHU. The tables below provide a summary, the advantages and disadvantages and the estimated number of CHWs needed by district for this scenario.

Scenario 2: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs**
>5km from PHU	Professional, paid CHW	40 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	1,000 pop / ~170 HHs	910
<5 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	850 pop / ~ 145 HHs	8,845

*Catchment area determined from C3 tool exercise

**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Scenario 2: Advantages and Disadvantages

Advantages	Disadvantages
• Paid CHW cadre can better expand services in hard-to-reach areas • Maintains all CHW services [except iCCM] for all areas <5km from PHU → PHU can do treatment, but still rely on CHW to do BCC, nutrition, surveillance, etc activities • CHWs can complete all assigned tasks in assigned time	• Need to mobilize resources to pay professional CHW cadre • No iCCM in communities that are far from PHU (i.e. 4.5 km from PHU), but are <5km

Scenario 2: Estimated Number of CHWs Needed by District for Scenario 2

	Areas > 5km from a PHU/facility				Areas < 5km from a PHU/facility		
	2020 Estimated population > 5kms from PHU	Estimated number of households (HHs)	Number of professional CHWs		2020 Estimated population < 5kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	34,583	5,963	35		600,717	103,572	707
Bombali	82,751	14,267	83		640,581	110,445	754
Bonthe	71,719	12,365	72		163,459	28,183	192
Kailahun	40,036	6,903	40		585,072	100,875	688
Kambia	18,572	3,202	19		366,323	63,159	431
Kenema	54,845	9,456	55		612,038	105,524	720
Koinadougou	216,881	37,393	217		278,691	48,050	328
Kono	87,558	15,096	88		519,265	89,528	611
Port Loko	45,619	7,865	46		302,338	52,127	356
Moyambo	58,408	10,070	58		647,566	111,649	762
Pujehun	56,507	9,743	57		360,986	62,239	425
Tonkolili	77,597	13,379	78		566,440	97,662	666
Western Rural Area	2,259	390	2		667,381	115,066	785
Western Urban Area	-	-	0		1,207,707	208,225	1,421
TOTAL	847,333	146,092	**910**		7,518,565	1,296,304	**8,845**

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Scenario 3a: CHWs >3km from PHU Provide the Full Package of Current Services and CHWs <3km from PHU Provide All Services Except iCCM

In this scenario, volunteer CHWs in areas >3km from a PHU (or with difficult access to PHU) would provide a full package of services, including iCCM. The CHWs in areas <3km from PHUs would provide all the services, except iCCM, because treatment can be accesses at the PHU. The tables below provide a summary, the advantages and disadvantages and the estimated number of CHWs needed by district for this scenario.

Scenario 3a: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs**
>3km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	6,213
<3 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	850 pop / ~ 145 HHs	7,284

*Catchment area determined from C3 tool exercise
**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Scenario 3a: Advantages and Disadvantages

Advantages	Disadvantages
• Keeps all existing CHW services in areas <3 km from PHU • Maintains all CHW services [except iCCM] for all areas <3km from PHU → PHU can do treatment, but still rely on CHW to do BCC, nutrition, surveillance, etc activities • CHWs can complete all assigned tasks in assigned time	• Very large number of CHWs (13,497 total) to manage • Extensive resource requirements to maintain

Scenario 3a: Estimated Number of CHWs Needed by District for Scenario 3a

	Areas > 3km from a PHU/facility				Areas < 3km from a PHU/facility		
	2020 Estimated population > 3kms from PHU	Estimated number of households (HHs)	Number of CHWs		2020 Estimated population <3kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	126,762	21,856	362		508,538	87,679	598
Bombali	222,898	38,431	637		500,433	86,282	589
Bonthe	116,561	20,097	333		118,617	20,451	140
Kailahun	173,508	29,915	496		451,584	77,859	531
Kambia	106,783	18,411	305		278,110	47,950	327
Kenema	148,929	25,677	426		517,953	89,302	609
Koinadougou	307,570	53,029	879		188,001	32,414	221
Kono	191,669	33,046	548		415,153	71,578	488
Port Loko	147,997	25,517	423		199,976	34,479	235
Moyambo	226,378	39,031	647		479,596	82,689	564
Pujehun	152,566	26,305	436		264,927	45,677	312
Tonkolili	243,370	41,960	695		400,667	69,081	471
Western Rural Area	9,327	1,608	27		660,335	113,851	777
Western Urban Area	294	51	1		1,207,707	208,225	1,421
TOTAL	2,174,613	374,933	6,213		6,191,599	1,067,517	7,284

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Scenario 3b: CHWs >5km from PHU Provide the Full Package of Current Services and CHWs < 5km from PHU Provide All Services Except iCCM

In this scenario, volunteer CHWs in hard to reach areas (defined as >5km from a PHU or with difficult access to PHU) would provide a full package of services, including iCCM. The CHWs in areas <5km from PHUs would provide all the services, except iCCM, because treatment can be accesses at the PHU. The tables below provide a summary, the advantages and disadvantages and the estimated number of CHWs needed by district for this scenario.

Scenario 3b: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs**
>5km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	2,421
<5 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	850 pop / ~ 145 HHs	8,845

*Catchment area determined from C3 tool exercise
**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Scenario 3b: Advantages and Disadvantages

Advantages	Disadvantages
• Keeps existing services in hard-to-reach areas • Maintains all CHW services [except iCCM] for all areas <5km from PHU → PHU can do treatment, but still rely on CHW to do BCC, nutrition, surveillance, etc activities • CHWs can complete all assigned tasks in assigned time	• Still large number of CHWs (11,226 total), although fewer than current levels • No iCCM in communities that are far from PHU (i.e. 4.5 km from PHU), but are <5km

Scenario 3b: Estimated Number of CHWs Needed by District for Scenario 3b

	Areas > 5km from a PHU/facility				Areas < 5km from a PHU/facility		
	2020 Estimated population > 5kms from PHU	Estimated number of households (HHs)	Number of CHWs		2020 Estimated population < 5kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	34,583	5,963	99		600,717	103,572	707
Bombali	82,751	14,267	236		640,581	110,445	754
Bonthe	71,719	12,365	205		163,459	28,183	192
Kailahun	40,036	6,903	114		585,072	100,875	688
Kambia	18,572	3,202	53		366,323	63,159	431
Kenema	54,845	9,456	157		612,038	105,524	720
Koinadougou	216,881	37,393	620		278,691	48,050	328
Kono	87,558	15,096	250		519,265	89,528	611
Port Loko	45,619	7,865	130		302,338	52,127	356
Moyambo	58,408	10,070	167		647,566	111,649	762
Pujehun	56,507	9,743	161		360,986	62,239	425
Tonkolili	77,597	13,379	222		566,440	97,662	666
Western Rural Area	2,259	390	6		667,381	115,066	785
Western Urban Area	-	-	0		1,207,707	208,225	1,421
TOTAL	847,333	146,092	2,421		7,518,565	1,296,304	8,845

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Scenario 4: CHWs >5km from PHU Provide the Full Package of Current Services; CHWs 3-5km From PHU Provide All Service Except iCCM; No CHWs < 3km from a Health Facility

In this scenario, volunteer CHWs in hard to reach areas (defined as >5km from a PHU or with difficult access to PHU) would provide a full package of services, including iCCM. The CHWs in areas 3-5km from PHUs would provide all the services, except iCCM, because treatment can be accesses at the PHU. There would be no CHWs deployed in communities <3 km from PHUs, and the PHUs would be responsible for the BCC, nutrition, surveillance and other tasks the CHWs are now performing. The tables below provide a summary, the advantages and disadvantages and the estimated number of CHWs needed by district.

Scenario 4: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs**
>5km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	2,421
3-5 km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● Reporting/surveillance	750 pop / ~ 145 HHs	1,770
< 3km from PHU	No CHW	n/a	PHU covers all activities and services currently done by CHWs	n/a	n/a

*Catchment area determined from C3 tool exercise
**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Scenario 4: Advantages and Disadvantages

Advantages	Disadvantages
• Keeps existing services in hard-to-reach areas • Fewer CHWs (4,191 total) will require fewer resources and management needs • Program management can focus on harder-to-reach areas • Maintains all CHW services [except iCCM] for all areas 3-5km from PHU → PHU can do treatment, but still rely on CHW to do BCC, nutrition, surveillance, etc activities in areas >3 km from PHU • CHWs can complete all assigned tasks in assigned time	• PHU may not have the staff or resources to do BCC, surveillance, etc currently done by CHWs < 3km from PHU → these communities may not receive these services • Involves decommissioning all CHWs < 3km from a PHU (a large number of current national CHWs) • No iCCM in communities that are not close to PHU (i.e. 4.5 km from PHU), but are <5km

Scenario 4: Estimated Number of CHWs Needed by District for Scenario 4

	Areas > 5km from a PHU/facility				Areas 3- 5km from a PHU/facility		
	2020 Estimated population > 5kms from PHU	Estimated number of households (HHs)	Number of CHWs		2020 Estimated population 3-5kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	34,583	5,963	99		92,179	15,893	123
Bombali	82,751	14,267	236		140,148	24,163	187
Bonthe	71,719	12,365	205		44,842	7,731	60
Kailahun	40,036	6,903	114		133,472	23,012	178
Kambia	18,572	3,202	53		88,212	15,209	118
Kenema	54,845	9,456	157		94,084	16,221	125
Koinadougou	216,881	37,393	620		90,689	15,636	121
Kono	87,558	15,096	250		104,112	17,950	139
Port Loko	45,619	7,865	130		102,378	17,651	137
Moyambo	58,408	10,070	167		167,970	28,960	224
Pujehun	56,507	9,743	161		96,059	16,562	128
Tonkolili	77,597	13,379	222		165,773	28,582	221
Western Rural Area	2,259	390	6		7,067	1,218	9
Western Urban Area	-	-	0		294	51	1
TOTAL	847,333	146,092	2,421		1,327,279	228,841	1,770

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Scenario 5a: CHWs >3km from PHU provide the full package of current services; no CHWs < 3km from a PHU

In this scenario, volunteer CHWs in areas >3km from a PHU or with difficult access to PHU) would provide a full package of services, including iCCM. There would be no CHWs deployed in communities <3 km from PHUs, and the PHUs would be responsible for the BCC, nutrition, surveillance and other tasks the CHWs are now performing. The tables below provide a summary, the advantages and disadvantages and the estimated number of CHWs needed by district.

Scenario 5a: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs**
>3km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	6,213
< 3km from PHU	No CHW	n/a	PHU covers all activities and services currently done by CHWs	n/a	n/a

*Catchment area determined from C3 tool exercise
**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Scenario 5a: Advantages and Disadvantages

Advantages	Disadvantages
• Keeps existing CHWs services in hard-to-reach areas and those >3 km from PHU • Fewer CHWs (6,213 total) will require fewer resources and management needs • Program management can focus on harder-to-reach areas • CHWs can complete all assigned tasks in assigned time	• PHU may not have the staff or resources to do BCC, surveillance, etc. currently done by CHWs < 3km from PHU → these communities may not receive these services • Involves decommissioning all CHWs < 3km from a PHU (a large number of current national CHWs)

Scenario 5a: Estimated Number of CHWs Needed by District for Scenario 5a

	Areas > 3km from a PHU/facility		
	2020 Estimated population > 3kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	126,762	21,856	362
Bombali	222,898	38,431	637
Bonthe	116,561	20,097	333
Kailahun	173,508	29,915	496
Kambia	106,783	18,411	305
Kenema	148,929	25,677	426
Koinadougou	307,570	53,029	879
Kono	191,669	33,046	548
Port Loko	147,997	25,517	423
Moyambo	226,378	39,031	647
Pujehun	152,566	26,305	436
Tonkolili	243,370	41,960	695
Western Rural Area	9,327	1,608	27
Western Urban Area	294	51	1
TOTAL	2,174,613	374,933	6,213

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Scenario 5b: CHWs >5km from PHU Provide the Full Package of Current Services; No CHWs < 5km from a PHU

In this scenario, volunteer CHWs in areas >5km from a PHU (or with difficult access to PHU) would provide a full package of services, including iCCM. There would be no CHWs deployed in communities < 5 km from PHUs, and the PHUs would be responsible for the BCC, nutrition, surveillance and other tasks the CHWs are now performing. The tables below provide a summary, the advantages and disadvantages and the estimated number of CHWs needed by district.

Scenario 5b: Summary

Geography	Cadre	Weekly Hours	Tasks/Services	Catchment Area*	Approximate # CHWs**
>5km from PHU	Volunteer CHW with stipend	15 hours	FP ● MNH ● BCC / HH visit ● Nutrition ● iCCM ● Reporting/surveillance	350 pop / ~60 HHs	2,421
< 5km from PHU	No CHW	n/a	PHU covers all activities and services currently done by CHWs	n/a	n/a

*Catchment area determined from C3 tool exercise
**Based on combination of C3 tool catchment area population and population estimates by geographic distribution from PHU

Scenario 5b: Advantages and Disadvantages

Advantages	Disadvantages
• Keeps existing CHWs services in hard-to-reach areas • Many fewer CHWs (2,421 total) will require fewer resources and management needs • Program management can focus on hard-to-reach areas • CHWs can complete all assigned tasks in assigned time	• PHU may not have the staff or resources to do BCC, surveillance, etc currently done by CHWs < 5 km from PHU → these communities likely will not receive these services • Involves decommissioning all CHWs < 5km from a PHU (a very large number of current national CHWs) • No iCCM in communities that are far from PHU (i.e. 4.5 km from PHU), but are <5km

Scenario 5b: Estimated Number of CHWs Needed by District for Scenario 5b

	Areas > 5km from a PHU/facility		
	2020 Estimated population > 5kms from PHU	Estimated number of households (HHs)	Number of CHWs
Bo	34,583	5,963	99
Bombali	82,751	14,267	236
Bonthe	71,719	12,365	205
Kailahun	40,036	6,903	114
Kambia	18,572	3,202	53
Kenema	54,845	9,456	157
Koinadougou	216,881	37,393	620
Kono	87,558	15,096	250
Port Loko	45,619	7,865	130
Moyambo	58,408	10,070	167
Pujehun	56,507	9,743	161
Tonkolili	77,597	13,379	222
Western Rural Area	2,259	390	6
Western Urban Area	-	-	0
TOTAL	847,333	146,092	2,421

Data Source: Secondary analysis by N. Oliphant of the 2015-2016 Georeferenced Census of CHWs. Shared by N. Oliphant at the request of UNICEF on 19 December 2019.

Attachment: WHO Recommendations

Recommendation 10: Target population size

Recommendation 10
WHO *suggests* using the following criteria in determining a target population size in the context of CHW programmes.
Criteria to be adopted in most settings:

- expected workload based on epidemiology and anticipated demand for services;
- frequency of contact required;
- nature and time requirements of the services provided;
- expected weekly time commitment of CHWs (factoring in time away from service provision for training, administrative duties, and other requirements);
- local geography (including proximity of households, distance to clinic and population density).

Criteria that might be of relevance in some settings:

- weather and climate;
- transport availability and cost;
- health worker safety;
- mobility of population;
- available human and financial resources.

Certainty of the evidence – very low. Strength of the recommendation – conditional.

7.10.1 Background to the recommendation

Prominent among the many challenges that may result in poor CHW performance is an excessive workload, often indirectly linked to an increased population size served by each CHW *(155, 156)*. The factors in question are the optimal population size or caseload that maximizes the effectiveness of community health workers. While many factors have been highlighted as influencing CHW performance, few studies have actually tested which intervention works best to manage CHW workload and improve CHW performance, and how such interventions should be implemented. Closely related to this interest in understanding how to balance the workload of community health service staff is the interest in determining whether CHWs should be assigned a targeted population size and how this population size might impact CHW productivity, coverage and health outcomes.

7.10.2 Rationale for recommendation

The GDG recognized the importance of determining an appropriate target population size to maintain a realistic workload and optimize CHW performance. Given the wide variance in CHW roles, the GDG felt the recommendation should focus on the factors that should be taken into account at the national level in setting the optimal target population size. The certainty of the evidence was very low, hence the conditional recommendation.

WHO 2018. WHO guideline on health policy and system support to optimize community health worker programmes. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.
https://apps.who.int/iris/bitstream/handle/10665/275474/9789241550369-eng.pdf?ua=1


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