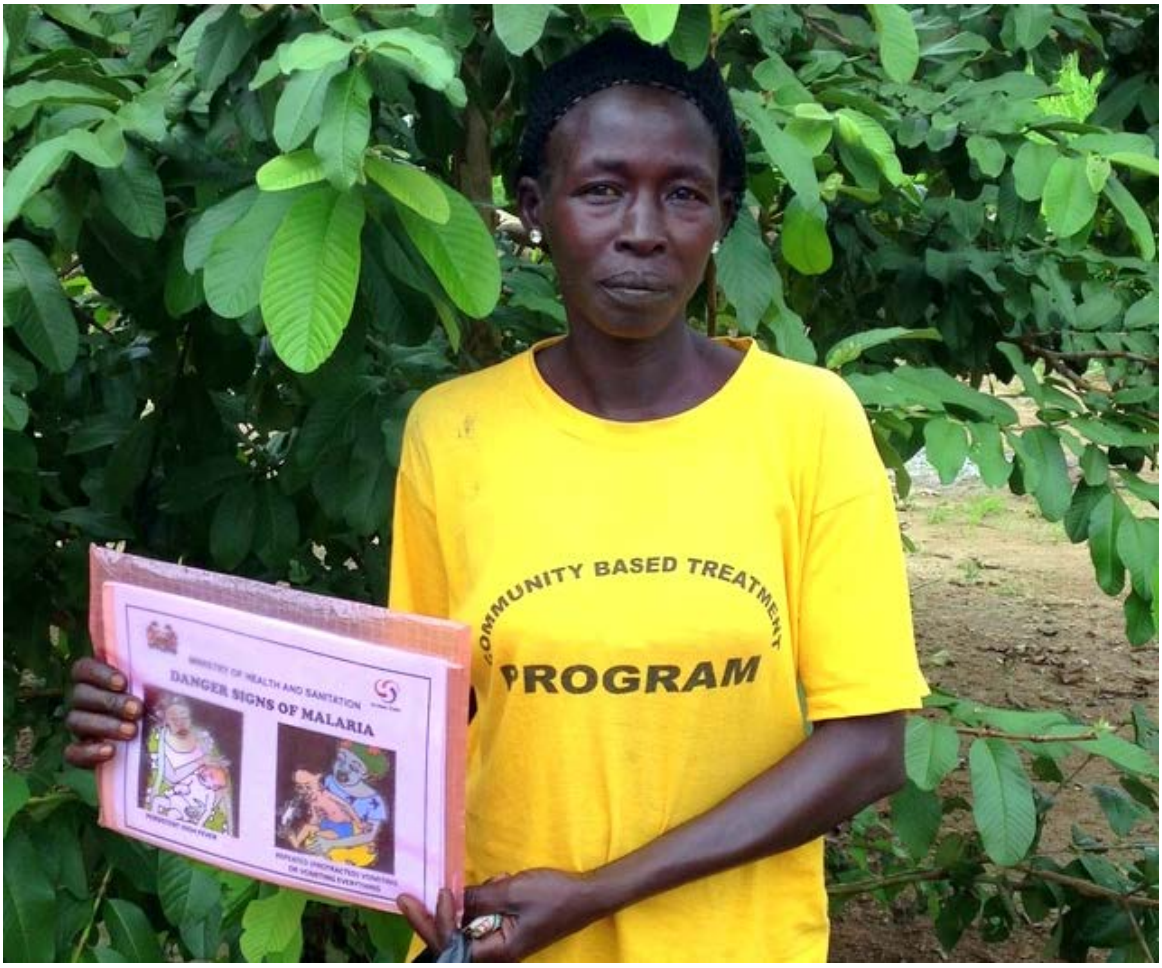
The Cost of Integrated Community Case Management in Kono District, Sierra Leone

December 2014



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Acknowledgements

This study was conducted by Management Sciences for Health, with funding from the Bill and Melinda Gates Foundation.

Key collaboration was provided by International Rescue Committee in Sierra Leone. Information on iCCM program costs was gathered, and interviews with CHWs were conducted by MSH staff in Kono district (See Annex B for the list of chiefdoms, health centers, and sites sampled.)

We wish to thank the following people from International Rescue Committee who were instrumental to this study: Laura Miller, Yolanda Barbera, Sahr Fillie, and Pheabean Momoh.

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Suggested citation:

Jarrah, Z., R. Lieber, C. Gilmartin, and D. Collins 2014. The Cost of Integrated Community Case Management in Kono District, Sierra Leone.

Key Words: integrated community case management (iCCM), community health workers (CHWs), malaria, diarrhea, pneumonia, costing, financing, Sierra Leone.

Acronym List

ARI	Acute respiratory infection
CHC	Community health center
CHO	Community health officer
CHW	Community Health Worker
CIDA	Canadian International Development Agency
DHMT	District health management team
FBO	Faith-based organization
FMOH	Federal Ministry of Health
GHI	Global Health Initiative
iCCM	Integrated Community Case Management
IRC	International Rescue Committee
MCHIP	Maternal and Child Health Integrated Program
MDG	Millennium Development Goal
MoH	Ministry of Health
MSH	Management Sciences for Health
NGO	Non-government organization
ORS	Oral rehydration salt
PHU	Primary Health Unit
PSI	Population Services International
SLL	Sierra Leone Leones
TBA	Traditional Birth Attendant
UNICEF	The United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

Integrated community case management (iCCM) is considered to be an effective strategy for expanding the treatment of diarrhea, pneumonia, and malaria, which are the leading causes of child mortality and result in nearly 44% of deaths worldwide in children under five years old. Despite the success of this strategy in several low-income countries, iCCM programs in many other countries have yet to be implemented or expanded. This is partly due to concern or uncertainty about the costs and financing of iCCM programs.

To better understand the costs associated with iCCM programs, Management Sciences for Health (MSH), with funding from the Bill and Melinda Gates Foundation, conducted costing studies in five African countries: Cameroon, Democratic Republic of the Congo, Sierra Leone, South Sudan, and Zambia. This report describes the results of the costing analysis of an iCCM program implemented by International Rescue Committee (IRC) in Kono District, Sierra Leone.

The analysis was conducted using a Sierra Leone iCCM costing model that was adapted from the generic iCCM Costing and Financing Tool developed by under the USAID-funded Translating Research into Action (TRAction) project. The period costed was 2012. The results of this analysis can be compared with the findings of IRC's Community Health Worker (CHW) iCCM impact evaluation conducted in 2012 in Kono district to review the cost of achieving the impact. The model and results can also be useful to the government and donors planning to implement or scale up iCCM.

Sierra Leone's health system is comprised of approximately 1,028 health facilities supported by the government, missions, private entities, and non-governmental organizations (NGOs). The Ministry of Health and Sanitation (MOHS) regulates and coordinates the national health system, while the District Health Management Teams (DHMT) implements these national policies at the district level. District health services are based on the primary health care concept and have three distinct levels of services: peripheral health units (PHU), district hospitals, and regional hospitals.

Although the district level health service model ensures the existence of health facilities across all districts of Sierra Leone, access to health care in Sierra Leone's more remote areas remains a challenge. With support from the Canadian international Development Agency (CIDA), IRC began implementing an iCCM program in Sierra Leone's Kono district in May 2006 to reduce childhood mortality in remote, hard-to-reach areas of Kono. The program focuses on training and supporting volunteer community health workers (CHWs) to provide timely and appropriate treatment to children ages two to 59 months for cases of malaria, diarrhea, and pneumonia, free-of-charge.

The iCCM program in Kono covered a catchment population of 31,584 children between 2 and 59 months old in 2012 with a package of iCCM services comprising treatment for presumptive malaria (fever), pneumonia and diarrhea – all provided free of charge. A total of 98,139 services were provided in 2012 (Table i). This came to an average of 3.11 services per child per year, which was 38% of the expected total number of episodes per child. The level of utilization of each service was quite high, compared with some other country programs – 38% of expected malaria cases, 28% of expected diarrhea cases, and over 100% of expected pneumonia cases were treated (possibly due to overtreatment of non-confirmed pneumonia cases). The reported referrals rate was low at 1.6% of all

cases seen. The iCCM services were provided by 840 voluntary CHWs, each covering an average catchment population of 38 children from 2-59 months, and each seeing an average of 2.3 cases per week.

The total recurrent cost of implementing the iCCM program was estimated at US$322,123. The largest cost elements were IRC's operating costs (47%), supervision costs (20%) and management costs (17%). Medicine costs were 15%.

The total recurrent cost came to US$10.20 per capita (child 2-59 months) and the average cost per service was US$3.45 for pneumonia, US$3.27 for diarrhea, US$3.32 for malaria, and US$1.08 for referrals. It should be noted that all costs presented in this analysis are total costs and some of these costs are already funded through separate streams. For example, we include the time for staff at the PHU and DHMT levels who are involved in supervising the iCCM program, although their salaries are paid for by the government.

It is important to note that these are standard costs – i.e., the costs that should be incurred for providing the services. They are not the actual expenditures, with possible exception of some of the overhead costs. In the case of medicines, for example, the cost shown here is the cost of providing the medicines needed for the numbers of services provided. It is not the actual expenditure on medicines. As a result it does not take into account possible shortages or stock-outs of medicines. This is especially important if the costs are used to compare with impact results, such as in cost per death prevented. In addition, we did not conduct any analysis of bottlenecks and do not know, for example, if there were medicine stock-outs during the year.

The initial start-up costs of training and equipping the 840 CHWs were incurred before 2012 and are not included in this study. Based on a reported CHW attrition rate of 6%, it would have been necessary to train and equip 54 replacement CHWs in 2012, which would have cost US$19.714 (US$365 each). This is not included in the recurrent costs.

With utilization at 38% of estimated need, some increases in utilization could perhaps be achieved, depending on factors such as care-seeking behavior and availability of medicines. Reductions in unit costs would, therefore, probably need to come from lowering the fixed costs – IRC overhead costs, management and supervision costs. Most donor-funded pilot iCCM projects have high overhead, management and supervision costs – this is part of the investment in developing a viable program. If the program is taken over by the government these costs would be expected to fall significantly, for example with much-reduced overhead costs and by supervisors sharing the costs of visits across more community health activities.

Table i. Summary of Results

	2012
Population (all ages)	206,430
Population covered by iCCM (2-59 months)	31,584
Total number of iCCM services	98,139
iCCM services per capita (2-59 months)	3.1
Total recurrent cost	$322,123
Average recurrent cost per capita (2-59 months)	$10.20
Average recurrent cost per capita (total population)	$1.56
Cost per service - malaria (fever) treatment	$3.27
Cost per service - pneumonia treatment	$3.45
Cost per service - diarrhea treatment	$3.32
Cost per referral	$1.08

Introduction

Integrated community case management (iCCM) has proven to be an effective strategy for expanding the provision of diarrhea, pneumonia, and malaria services and is accepted by international donors and developing countries as a key strategy to meet Millennium Development Goal 4 on reducing child mortality.

Diarrhea, malaria and pneumonia are leading causes of child mortality and cause nearly 44% of deaths in children under five years old. iCCM, the delivery of timely and low-cost interventions at the community level by community health workers (CHWs) is promoted by the World Health Organization (WHO), The United Nations Children's Fund (UNICEF), United States Agency for International Development (USAID), and Global Health Initiative as an effective strategy to deliver lifesaving interventions for these illnesses. Several developing countries have adopted and promoted policies and programs in which CHWs promote timely care by treating uncomplicated cases of diarrhea, pneumonia, and malaria and referring severe cases to health facilities.

Despite the success of this strategy in several low-income countries, iCCM programs in many other countries have yet to be implemented or expanded. This is partly due to concern or uncertainty about the costs and financing of iCCM programs as well as the quantitative health outcomes that will result from the investment. A comprehensive understanding of costs and financing as they relate to results will help countries who are considering implementing or expanding iCCM programs to advocate for donors and ministries of finance to allocate sufficient funds to appropriate levels of the health system to achieve improved health outcomes. It will also allow for costs to be better monitored and controlled, thus ensuring sufficient use of scarce resources.

To better understand the costs associated with iCCM programs, Management Sciences for Health (MSH), with funding from the Bill and Melinda Gates Foundation, conducted costing studies in five African countries: Cameroon, Democratic Republic of the Congo, Sierra Leone, South Sudan, and

Zambia.[1] The results of these analyses can be compared with impact evaluations of these same programs to review the cost of achieving the impact and can serve as a baseline for further analyses. This report describes the results of the costing analysis in Sierra Leone of an iCCM program implemented by IRC in Kono district.

Background and Country Context: Sierra Leone

Following its 11-year civil war (1991-2002), Sierra Leone remains one of the least-developed countries in the world, ranking 177 out of 187 countries on the Human Development Index[2]. Despite recent progress to rebuild its health system, the country faces serious public health challenges including a shortage of skilled healthcare workers, a weak medical product procurement system, an unavailability of essential drugs and medicines, and rampant corruption. The country also ranks first globally in under-five mortality with an average of 185 per death per 1,000 live births and is currently off-track in meeting Millennium Development Goal four in the face of high rates of preventable illnesses such as malaria, pneumonia, and diarrhea.[3]

Sierra Leone's health system is comprised of approximately 1,028 health facilities supported by the government, missions, private entities, and non-governmental organizations (NGOs). At the central level, the Ministry of Health and Sanitation focuses on policy formulation, including setting standards and quality assurance, resource mobilization, capacity development, technical support, and the provision of nationally coordinated services (e.g. epidemic control, monitoring and evaluation of overall sector performance and training). Each of the country's 14 districts are comprised of a network of peripheral health units (PHUs) and a district hospital, which are managed by the District Health Management Team (DHMT). The DHMT is responsible for the implementation of national health policies and district-level planning and management. District health services are based on the primary health care concept and have three distinct levels of services: peripheral health units (community health centers, community health posts, and maternal and child health posts), district hospitals, and regional hospitals.

1. **Peripheral health units** networks are sub-divided into three distinct levels:
    - Maternal and Child Health Posts (MCHPs) which are located at the village levels for populations less than 5,000 persons. Staffed by MCH Aides, MCHPs provide a range of basic services including antenatal care, supervised deliveries, postnatal care, family planning, growth monitoring, and promotion for under-five children, immunization, health education, management of minor ailments, and referrals. MCH Aides are supported by community health workers including TBAs.
    - Community Health Posts (CHPs) provide health services to towns with populations between 5,000 and 10,000 persons and are staffed by State Enrolled Community Health Nurses (SECHNs) and MCH Aides. In addition to providing the same services as MCHPs,

[1] The reports can be found at http://www.msh.org/our-work/health-systems/health-care-financing/costing-of-health-services
[2] Human Development Index Report. 2013. http://hdr.undp.org/en/reports/global/hdr2013/
[3] UNICEF. http://www.unicef.org/infobycountry/sierraleone_statistics.html

they also provide services focused on the prevention and control of communicable diseases and rehabilitation.

- Community Health Centres (CHCs) are located at the Chiefdom level and cover populations between 10,000 to 20,000 persons and are staffed with a community health officer (CHO), SECHN, MCH Aides, an epidemiological disease control assistant, and an environmental health assistant. CHCs provide the same services as CHPs in addition to those focused on environmental sanitation and supervise the CHPs and MCHPs within the Chiefdom.

2. **District hospitals** for secondary care, providing outpatient services for referred cases from PHUs and the living in the area, inpatient and diagnostic services, management of accidents and emergencies, and technical support to PHUs. The District Health Management Team (DHMT) is responsible for the overall planning, implementation, coordination, monitoring and evaluation of the district health services under the leadership of the District Medical Officer (DMO).
3. **Regional hospitals** for tertiary care.[4]

Recognizing user fees costs as a significant barrier to accessing health care,[5] the Government of Sierra Leone (GOSL) launched its Free Health Care Initiative (FHCI) in April 2012 aimed at increasing access to key health care services by eliminating user fees for children under five years, pregnant women, and lactating mothers. While the FHCI represents a significant milestone in expanding access to and improving maternal and child healthcare, the initiative has faced criticism for substandard care, mismanagement of essential drugs, and lacking effective monitoring and accountability systems.[6]

To reduce childhood mortality in remote, hard-to-reach areas, the IRC began implementing an iCCM program in Kono district in May 2006 with support from the Canadian international Development Agency (CIDA). The program focuses on training and supporting volunteer community health workers (CHWs) to provide timely and appropriate free treatment to children ages 2 to 59 months for cases of malaria, diarrhea, and pneumonia. While CHWs are unpaid, the IRC provides a standard motivation package which includes a T-shirt, certificates/awards, job aids for identifying danger signs, and standard CHW materials and equipment including counting respiratory rate (ARI timer).

The MoHs CHW Policy (June 2012) recommends CHWs serve a population of 100-500 people. However, the reality is quite different, especially in Kono, where the CHWs were selected and trained before the development of the policy. CHWs are selected by members of their respective communities and represent an accessible entry point of entry to the formal health system, providing PHU referrals to children with severe symptoms. Following selection, CHWs attend a six-day basic training session (see Annex A) at the PHU to develop their capacity to identify and treat uncomplicated cases of pneumonia, malaria, and diarrhea. Trainings are led by trainers from the district-level pool of trainers and are designed to prepare CHWs to identify signs of common childhood illnesses and danger signs among children under five, determine referrals, provide treatment for malaria, diarrhea, and pneumonia, and follow-up the child's illness with the caregiver. In addition to the basic training, CHWs also participated in one refresher training.

[4] Government of Sierra Leone Ministry of Health and Sanitation. National Health Sector Strategy 2010-2015. November 2009.
[5] 2008 National Service Delivery Perception Survey.
[6] Amnesty International. At a Crossroads: Sierra Leone's Free Health Care Policy. 2011.

CHW supervision structures are in place to maintain correct performance, motivate CHWs, and ensure they have an adequate supply of essential medicines and materials. The IRC employs a cadre of CCM program officers in each implementing district who are responsible for managing between 8-16 peer supervisors. CCM Officers conduct supervision alongside peer supervisors, and aim to join each peer supervisor every one to two months. Supported by IRC with a monthly stipend of 100,000 SLL, peer supervisors live and work within the local communities and manage between 9-20 CHWs. As part of their responsibilities, peer supervisors conduct monthly supervision visits to CHWs and follow a standardized supervisory checklist to ensure CHWs are following protocols, are correctly treating their patients, and have a full stock of medicines. During these visits, the peer supervisor also meets with the caregivers of recent patients to confirm they received appropriate treatment and follow-up from the CHWs while educating them about preventive measures (e.g. usage of mosquito nets, hand washing, immunizations, vitamin A, etc.) The peer supervisor supports the health facility staff to hold monthly meetings at the PHU during which CHWs under his/her supervision validate their data and monthly reports with the PHU in-charge and stock up on medications. Although the PHU in-charge does not receive monetary support from the IRC, he or she attends monthly meetings and is responsible for providing regular support and supervision while also participating in DHMT supervisions. Prior to the start of the iCCM project, both peer supervisors and the PHU-in charge are required to attend a 5-day supervision training at the beginning of the program focused on supportive supervision, reporting, on-the-job training, and medicine supply. Beginning in September 2013, CCM program officers will participate in joint supervisions with the DHMT on a quarterly basis.

Methodology

Model Design

The Sierra Leone iCCM costing model was adapted from the generic iCCM Costing and Financing Tool developed by under the USAID-funded Translating Research into Action (TRAction) project.[7] It includes service delivery costs at the community level, and support, supervision, and management costs at all levels of the health system. At the service delivery level, standard costs were used based on the types and quantities of resource needed (such as medications) and the numbers of services provided. WHO iCCM Guidelines were used, since the IRC and other iCCM implementing partners in Sierra Leone followed those when designing programs. Other costs, such as supervision and training, were allocated using a top-down methodology.

Data Collection

Data for this analysis were collected at three levels: first, at the central level, from relevant iCCM implementing agencies; second, at the district level, from the Ministry of Health's District Health Medical Team; and third, at the health center and village level, through questionnaires administered to CHWs and their supervisors.

[7] See http://tractionproject.org/content/integrated-community-case-management-costing-financing-tool or http://www.msh.org/resources/integrated-community-case-management-costing-financing-tool

Central and Partner Level Data Collection

The main purpose of the data collection at central and partner level was to gather assumptions on the standard costs of implementing the iCCM program. All standards, norms, and protocols were collected from IRC.

Data were collected from IRC's offices in Freetown and Koidu town, Kono district. Data collected from IRC included iCCM program information, standard treatment protocols, population coverage, prices of equipment and medicines, and management, supervision, meeting and training costs.

All program costs funded directly by IRC were input into the tool and any relevant IRC policies were followed. For example, peer supervisor salary may vary by district and by donor, but we limited our assumptions to the peer supervisor salaries paid by IRC. Finally, IRC management costs are also taken into account. This can include management and administrative staff costs, drivers, and office overhead costs.

District Level Data Collection

The main purpose of the data collection at district level is to gather additional relevant costs of the iCCM program, including costs not directly incurred by IRC. The District Health Medical Team (DHMT)—the Ministry of Health's district level representation—plays a supervisory role in the iCCM program. For example, DHMT staff perform ad hoc supervision visits to CHWs in villages surrounding PHUs; the salaries for these staff are paid by the government of Sierra Leone and these staff costs are included in the iCCM program costing.

At the District Health Medical Team office, data were collected from the District Medical Officer and a DHMT Data Entry Clerk who is more closely involved with the iCCM program. They provided detailed information on DHMT staff time spent on iCCM, supervision, reporting, meeting, and trainings. Additionally they provided salary estimates for each DHMT staff-person involved with the iCCM program. It should be noted that the DMO was unable to provide the exact salary for the DHMT staff due to a new banking system and thus many of the figures are estimates. All data were collected via oral interviews and information was captured electronically.

Facility and Village Clinic Data Collection

The purpose of the data collection at the facility and village level is twofold: first, to serve as a 'reality check' that will provide on-the-ground context for the costing study; and second, to provide additional information on the CHWs' time, availability, and activities, which are not standardized.[8] The data collected was used to help build a picture of Kono district CHW program, recognizing that the small sample size may limit the extent to which the results reflect the district's entire CHW program.

The sample for this costing exercise was selected from Kono district, Sierra Leone, which was one of the sites of IRC's 2012 iCCM impact evaluation. IRC's impact evaluation included a sample of 22 PHUs

[8] Since CHW are volunteer health workers, they are not expected to adhere to standardized working hours, for example.

from seven chiefdoms within Kono district. In order to complement IRC's impact evaluation, the PHU and CHW sample for this costing exercise was selected from IRC's impact evaluation sample. With a target sample size 30-40 CHWs, six PHUs from five chiefdoms were selected for the sample, assuming 5-8 CHWs could be interviewed at each PHU.

The PHUs were selected based on four factors: proximity to Koidu town, population size, number of CHWs, and vehicle accessibility during rainy season (see Table 1below). The PHU's proximity to Koidu town—the main town in Kono district—was considered in order to get a diversified sample of PHUs in terms of their access to resources or facilities in the urban area. Proximity was estimated by IRC staff based on driving time from Koidu town. The sample included PHUs with varying catchment area population size in case the population size has an impact on the implementation and supervision of the CHW program. For logistical reasons, only PHUs with at least 8 CHWs were selected in order to ensure that a sufficient number of CHWs would be available for interviews at each PHU. Finally, data collection was carried out during Sierra Leone's rainy season and thus the road conditions leading to PHUs were also considered. Two PHUs that were initially selected were later substituted for other similar PHUs due to treacherous and potentially unsafe road conditions.

Table 1. Summary of Sample Selection Criteria

PHU name	Chiefdom	Relative Distance from Koidu town (near/medium/far)	Population Size	CHWs
Njala	Nimikoro	Near	8,168	28
Bumpeh	Nimikoro	Near	7,567	10
Woama	Tankoro	Near	3,845	11
Sewafeh	Nimiyama	Medium	14,711	9
Tombodu	Kamara	Medium	5,610	15
Yormandu	Sandor	Far	6,849	14

The PHU in-charge and CHW peer supervisor were interviewed at each PHU. The PHU in-charges and peer supervisors were asked about his/her salary, time spent on iCCM program supervision and reporting, and expenditure on iCCM trainings and meetings. All data were collected via oral interviews and information was captured electronically. A standard questionnaire was utilized for these interviews (see Annex C).

A total of 42 CHWs were interviewed from six PHUs. An average of 7 CHWs were interviewed at each site, with a range from 2-11 CHW interviews per site (see table 2 below). The MSH data collectors utilized a standard CHW questionnaire, which was adapted for the IRC Kono iCCM program context (see Annex C with questionnaire). The questionnaire covered topics including CHW coverage, availability for CHW activities, medication stock-outs, supervision, reporting, meetings, trainings, iCCM services provided and time spent per service, referrals, non-iCCM CHW activities, supplies and equipment availability, and payment and incentives. An IRC staff-person and DHMT staff-person assisted with translation during the interviews. All data were collected via oral interviews and information was captured electronically.

Table 2. Summary of Data Collection in Kono District

Chiefdom Visited	PHU name Visited	Number of CHWs interviewed	PHU in-charges interviewed	Peer Supervisors Interviewed
Nimikoro	Njala	2	1	1
Nimikoro	Bumpeh	8	1	1
Tankoro	Woama	11	1	1
Nimiyama	Sewafeh	5	1	1
Kamara	Tombodu	8	1	1
Sandor	Yormandu	8	1	1
	TOTAL	**42**	**6**	**6**

Assumptions and Standard Data Input into the Sierra Leone Model

Period of Analysis

Actual service and cost data were collected for 2012. The data collection visit took place in August 2013.

iCCM Package of Services

CHWs are trained to identify and treat non-severe cases of diarrhea, pneumonia, and malaria. In the event of any danger signs, the CHWs will refer the patient to the nearest PHU. Table 3 below shows a summary of the treatment protocols and treatment times for each intervention in the iCCM package (see Annex F for full details on the standard treatment protocols). The treatment times listed below reflect the average reported time spent diagnosing, treating, and following-up on each of the illnesses based on responses from CHW interviewed.

According to the IRC iCCM training manual for CHWs, suspected pneumonia cases are assessed for rapid breathing using an ARI timer; positive cases (50+ breathes per minute in children 2-12 months or 40+ breathes per minute in children 12-59 months) are treated with cotrimoxizole, and negative cases are designated as cough and are not treated. Diarrhea is defined as a child who has 3 or more watery stools within 24 hours. Children 2-59 months with diarrhea are treated with ORS and zinc. Suspected malaria cases – all children with fever – are treated presumptively with ACTs. In 2012, IRC piloted the use of rapid diagnostic tests (RDTs) at six PHUs in Kono and trained 103 CHWs on their use. The pilot served as an opportunity to learn key lessons for future implementation, however, the IRC has reported a shortage in RDT supplies thereby making the tests unavailable to CHWs. Since the pilot was done on a small scale, and since IRC does not anticipate a quick resolution to this problem, the use and associated costs of RDTs have been excluded from this costing analysis. Should this situation change, the use of RDTs can be modeled using the iCCM costing tool.

The unit cost of medicines were provided by IRC who procured them in 2012.The unit costs include the cost of procurement and transport.

Table 3: Treatment protocols and costs for diarrhea, pneumonia, and malaria (USD)

	Average time to treat one patient (minutes)	Medicines/supplies needed	Average medicine cost per episode (USD)
Malaria (fever)	74	ACT	$0.62
Pneumonia	91	Cotrimoxazole (120 mg)	$0.18
Diarrhea	78	ORS, Zinc	$0.51

Population and Geographic Coverage Targets

The total population of Kono District in 2012 was 303,573, comprising a total of 14 chiefdoms. With CIDA funding, IRC's CHW program covered 100% of Kono district PHUs by 2010. However, in early 2011 IRC withdrew the CHW program from chiefdom townships and remained only in Kono's hard-to-reach areas because of resource allocation decisions around where the CHW program was most needed and beneficial. Therefore, in 2012, the CHW iCCM program was present in Kono district's remote areas, which are estimated to constitute 68% of Kono's population, or 206,430 people. See Table 4 below for a detailed break-down of population and geographic coverage figures for 2012.. IRC plans to maintain district wide coverage in the hard-to-reach areas through the end of 2014 under UNICEF funding and anticipates that future donors will seek to maintain the same coverage level through 2017.[9]

Children between 2 and 59 months are estimated to make up15.3% of the total population; on that basis, the iCCM program was intended to be available to 31,584 children in 2012.

CHWs work in their home villages. Typically a CHW will cover only one village (their own village), but occasionally they will cover a nearby village if it is too small to warrant its own CHW or if no trained CHW exists in the neighboring village. Additionally, if a village is particularly large there may be two or more CHWs serving different geographic areas within the village. The villages covered by CHWs typically have limited access to PHUs. In 2012 there were 840 CHWs working in 68 PHU catchment areas, which consist of a total of approximately 900 villages. The average village population in 2012 was 270, which amounts to about 41 children between 2 and 59 months per village.[10]

[9] The model contains projected costs through 2017 which can be made available on request.
[10] Average population per village was calculated by multiplying the average household size (6 people) by the average number of households in a village (45) in 2012. IRC estimates there are between 20-70 households per village, resulting in the average of 45.

Table 4. Population and Coverage Assumptions, Kono District, 2012

	2012
Number of Chiefdoms with iCCM coverage	14
Number of PHUs supervising iCCM	68
Number of Villages providing iCCM	900
Target population covered by iCCM (all ages)	206,430
Target population covered by iCCM (2-59 months)	31,584
Total Number of CHWs	840

Incidence Rates

Incidence rates are input into the iCCM Costing and Financing Tool as the number of episodes per child per year. The following rates were provided by IRC for use in the iCCM costing study: 3.59 episodes of diarrhea per child per year[11]; 0.46 episodes of pneumonia[12]; and 4.23 episodes of malaria[13,14].

CHWs also provide referrals to the nearest PHU when a child presents with danger signs; no initial treatment is provided, so there are no medicine or supply costs for referrals. Since a true referral rate could not be determined, a proxy incidence rate was calculated based on the proportion of referrals to cases treated in 2012. With 96,521 cases of pneumonia, diarrhea and malaria treated in 2012 and 1,618 referrals, this proportion was calculated at 1.7%. Therefore, the incidence rate used to calculate expected referrals in the projection years was 1.7% of the combined incidence rates for pneumonia, diarrhea, and malaria (fever), which amounts to 0.14 referrals per child per year.[15]

Table 5 shows the summary of incidence rates input into the tool. The tool allows different incidence rates to be input for each year of the iCCM program – for example, if malaria incidence was expected to decline due to preventive activities, this could be reflected in the tool. However, in this case the incidence rates have been kept constant.

[11] Fischer Walker et al. Diarrhea incidence in low- and middle-income countries in 1990 and 2010: a systematic review. BMC Public Health 2012, 12:220. Accessed at: http://www.biomedcentral.com/1471-2458/12/220
[12] Rudan IL, Boschi-Pinto C, Biloglav Z, Mulholland K, Campbell H. 2008. Epidemiology and etiology of childhood pneumonia. Bull World Health Organ 86:408-416.
[13] World Malaria Report 2008. Estimate for Ivory Coast, "cases of fever suspected to be malaria".
[14] Malaria and fever are used interchangeably by IRC since all fever cases are presumptively treated with ACTs as malaria cases. Therefore the 4.2 episodes of malaria per child per year are more correctly 4.2 episodes of fever.
[15] This is quite a low rate – in general around 10% of cases seen are likely to be complicated and needing referral.

Table 5. Incidence Rates for diarrhea, pneumonia, and malaria (episodes per child year)

iCCM Service	Incidence rate used in tool	Source
Malaria (fever)	4.23	World Malaria Report 2008
Pneumonia	0.46	Rudan et al, 2008
Diarrhea	3.59	Fischer Walker et al, 2012
Referrals	0.14	1.7% of the combined fever, pneumonia, and diarrhea rates

Caseload and Service Delivery Targets

Actual caseload data for the 2012 were provided by IRC and input into the tool (see Table 6 below).

We calculated the percentage of actual iCCM coverage achieved in 2012 by dividing total actual caseloads in 2012 by the expected number of cases for the same year. Expected number of cases are determined by multiplying the target population of children by the incidence rate of each disease. For example, there were an estimated 31,584 children in Kono in 2012; multiplying this figure by the incidence rate of 4.23 episodes of presumptive malaria results in 133,599 total expected cases of malaria. The actual number of malaria cases treated (50,188) divided by the expected cases of malaria (133,599) results in 38% of expected cases that were actually treated. Using the same method, 122% of expected pneumonia cases were treated, and 28% of the expected diarrhea cases were treated in 2012.

The unusually high iCCM coverage of pneumonia in 2012 (122%) is likely attributable to over-treatment, which is a recognized challenge due to the fact that (a) CHWs do not consistently distinguish between cough and pneumonia and (b) there can be limited specificity and sensitivity of fast breathing as an indicator for pneumonia, which leads to overtreatment[16]. Additionally, the service delivery coverage estimates are based on population numbers and incidence rates that may be inaccurate due to enumeration challenges in Sierra Leone, which would also affect the accuracy of the coverage rates.

Table 6. Actual 2012 caseloads for 2012

	2012
Malaria (fever)	50,188 (38%)
Pneumonia	17,480 (122%)
Diarrhea	28,853 (28%)
Referrals	1,618

[16] Antonio Pio. 2003. Standard case management of pneumonia in children in developing countries: the cornerstone of the acute respiratory infection programme. Bull World Health Organ 81:298-300

CHW Availability & iCCM Service Delivery Assumptions

Since CHWs are unpaid volunteer health workers, they are not expected to work a standard number of hours per day or days per year. As mentioned previously, CHWs primarily serve their own village and are available upon request. For the purposes of this analysis, the actual number of CHWs in Kono district in 2012 was included in the tool. An annual attrition rate of 6% for CHWs was estimated based on the number of CHWs that abandoned or died after being trained.[17] The loss due to attrition is factored into the tool, so that in order to maintain the current number of 840 CHWs in Kono, 54 CHWs will need to be trained each year.

Based on our questionnaires, CHWs worked an average of 3.7 hours per week on various activities as a community health worker. The majority of CHWs described themselves as available at all times of the day, and all days in the year (except for infrequent travel outside of the village), since patients are typically brought to their houses for treatment as needed. Since CHWs only performed iCCM work in 2012, 100% of CHW time was spent specifically on iCCM, and this was used to allocate the indirect costs such as supervision.[18]

Management, Supervision, Meetings and Trainings

Costs of management, supervision, meetings and trainings were primarily provided by IRC, and supplemented with information from the DHMT, PHU in-charges, and peer supervisors. Management costs primarily comprise salary costs for any staff involvement in the management or the administration of the iCCM program. Although IRC receives support through IRC's international regional and home offices, we limited the analysis to include only salary costs for staff based in Sierra Leone. Each relevant staff is input into the iCCM tool, in addition to the total annual salary and percentage of time spent on the iCCM program. Supervision costs have two components: the salary costs for all staff involved in supervision and fuel, per diem etc. Currently, IRC has 6 CCM officers based in Kono district that provide supervision to peer-supervisors and CHWs across the entire district. In addition to IRC supervision, DHMT staff devotes time to CHW supervision. These DHMT staff include the District Medical Officer (DMO), Data Entry Clerks, M&E Officers, Malaria Focal Person, Disease Surveillance Officer, Zone Supervisors, District Medical Store Officer, and PHU in-charges. In addition, peer supervisor salaries were included in the supervision costs as they provide direct supervision to CHWs.

Meetings are held monthly at the PHUs in order for the peer supervisor to receive reports from the CHWs, give feedback to CHWs, and replenish CHWs' drug stock. CHWs submit monthly reports to the PHUs, which are then compiled and sent up to the district, and then national level. These meetings did not include costs in 2012, but under the 2013-2014 UNICEF funding CHWs will begin to receive transport reimbursement for the monthly meetings.

[17] An estimated 56 of the 871 CHWs trained by IRC left each year after being trained.
[18] According to IRC, the CHWs will provide additional MNCH services from late 2013, and, after that, the amount of time they spend on iCCM will reduce to 87%.

Training costs were split between start-up trainings and refresher trainings. Start-up trainings are assumed to occur a single time for each new CHW, whereas refresher trainings would be applied to the entire pool of CHWs that are working in a given year. Start-up trainings also include a peer supervisor training. All iCCM peer supervisor and CHW start-up trainings occurred between 2009-2010; since this was prior to the year of analysis for this study, we have not currently included the costs of any start-up trainings. IRC conducted refresher trainings for CHWs one year after they were trained and thus each CHW received refresher training in 2011; since this was prior to the year of analysis for this study, we have not currently included the costs of these refresher trainings

Analysis

Summary of Findings from CHWs Interviewed

A total of 42 CHWs were interviewed for this sample. At the time of the interview, all of the CHWs reported exclusively providing iCCM services as part of their CHW work. Therefore, the following information on time spent on CHW activities will exclusively refer to iCCM work, unless otherwise noted.

CHWs carry out health activities on 6.8 days per week on average. The CHWs asserted that 100% of the time that they spend doing CHW work is iCCM-related. Thus the 100% figure was used throughout the model to account for the portion of the CHW program costs that were attributed to the iCCM program of CHWs' time in 2012.

CHWs received supervision through meetings with the CHW peer supervisor at the PHU and in the CHW's respective villages. All CHWs interviewed confirmed that they receive regular supervision visits from the peer supervisor. The CHWs reported that the CHW peer supervisor travels to visit CHWs in their villages 1.5 times per month, on average. CHW peer supervisor visits are 100% dedicated to iCCM supervision. CHWs consistently reported that peer supervisors check CHW medicine stock, test the CHWs' knowledge on key danger signs, check the patient register, and provide refresher information during supervisory visits. Many CHWs also reported that peer supervisors would do a spot check on patient treatment by selecting a patient in the register and following up with the caretaker to ask about the CHW's treatment and performance.

The peer supervisors are responsible for compiling CHW reports by aggregating the information included in CHW patient and drug registers. Peer supervisors compile the reports at the end of each month and then give a copy to the IRC CCM officer and to the PHU in-charge. The PHU in-charge reviews the report and adds the information in the MoHs Community Treatment reporting form, that is sent to the District Health Medical Team and added into the national HMIS. Peer supervisors reported spending between 3-18 days on iCCM meetings or reporting (average 6.7 days) per month, and PHU in-charges reported spending between two hours and two days on iCCM reporting.

Time spent per type of case (diarrhea, malaria, and pneumonia) varied across all CHW respondents. For a diarrhea case, CHWs spend approximately 36 minutes per case assessing the child and providing treatment (minimum 5 minutes, maximum 120 minutes, median 33 minutes), and approximately 42 minutes per case with follow-up visit(s). Pneumonia cases are slightly longer, with an average time of service of 51 minutes (minimum 5 minutes, maximum 120 minutes, median 47.5 minutes), and approximately 40 minutes per case with follow-up visit(s). For malaria, CHWs spend approximately 35

minutes assessing and treating each case (minimum 4 minutes, maximum 90 minutes, median 30 minutes), and an average of 40 minutes per case with follow-up visit(s).

The CHWs consistently reported that they did not receive payment for their services as CHWs. CHWs also consistently reported that they do not receive any non-monetary payment for their services as CHWs, other than having once received a t-shirt from IRC. As an incentive to CHWs, the PHU in-charges and IRC staff have encouraged the community to support their CHWs through initiatives such as CHW exemption from communal labor, or helping CHWs with their farm work. Of the CHW respondents, only 29% (12 out of 42) reported that they have ever received such support from the community. Of these respondents, 67% receive support regularly, while 33% received one-time support.

Six of the 42 CHWs interviewed reported experiencing a stock-out of medicines in the past year. All six CHWs reported a stock-out of ACT 50 (toddler) and three of the six CHWs reported a stock-out of ACT 25. CHWs reported that when they experience stock-outs, they are forced to refer their patients to the primary health unit.

Utilization

The catchment population of children 2-59 months in 2102 was 31,584 (Table 7).and a total of 98,139 cases were seen in that year (Table 7). In total that comes to 3.1 cases treated per capita (child 2-59 months). By disease there were 1.59 malaria cases treated per capita, 0.55 pneumonia cases, 0.91 malaria cases and 0.05 referrals. According to the incidence rates, the expected episodes of diarrhea per child per year were 3.59; pneumonia 0.46; and malaria 4.23. This would result in a total of 7.99 episodes per child per year. Thus, in 2012, 38% of the total expected episodes of diarrhea, pneumonia and malaria were treated.

Table 7. Summary of actual iCCM caseload and cases per capita, 2012

	2012
Population 2-59 months	31,584
Total number of iCCM cases seen	
Malaria (fever)	50,188
Pneumonia	17,480
Diarrhea	28,853
Referrals	1,618
Total cases	98,139
Number of iCCM cases seen per capita (children 2-59 months)	
Malaria (fever)	1.59
Pneumonia	0.55
Diarrhea	0.91
Referrals	0.05
Total cases per capita	3.11

The number of CHWs and cases treated per CHW are shown in Table 8. Based on IRC records, in 2012 there were 840 CHWs covering 68 PHU catchment areas throughout the 14 Chiefdoms of Kono district. On average, each CHW treated 2.3 iCCM cases per week.

Table 8. Number of CHWs and cases treated per CHW in 2012

	2012
Total Number of CHWs	840
Total Number of iCCM Services	98,139
Average Number of iCCM Cases per CHW (year)	117
Average Number of iCCM Cases per CHW (week)	2.3
CHWs Per 1,000 Population	4.1
CHWs per Village	0.9

Costs

Total iCCM program costs were divided between start-up costs and recurrent costs. Start-up costs are generally incurred at the beginning of the program but may also continue throughout the life of the program—for example, the cost of training new CHWs in iCCM to replace those lost to attrition. Recurrent costs are regularly incurred as part of the running of the iCCM program, such as the cost of medicines, supervision, and management.

All costs were input into the iCCM Costing and Financing Tool in Sierra Leone Leones (SLL). For costs that were provided in USD, these were converted into SLL using an exchange rate of 4,350 SLL to 1 USD.

Start-up and CHW Training Costs

We assumed that training and equipment costs for the initial batch of CHWs and supervisors were incurred before 2012 and we did not include those costs here.

The figures shown in Table 9 relate to training and equipment for 54 new CHWs who would need to be taken on to replace those that would have left, based on the 6% attrition rate. These costs are shown in Table 9 below but are not included in the recurrent costs.

Table 9. Number of CHWs and start-up iCCM Program Costs, 2012 (USD)

	ACTUAL
	2012
Total CHWs required	840
CHWs lost to attrition	54
Number of replacement CHWs to be trained and equipped	54
CHW training costs	US$8,745
CHW equipment costs	US$10,969
Total replacement CHW costs	US$19,714
Training and equipment cost per replacement CHW	US$365

The cost to train and equip one CHW was determined by dividing the total training and equipment costs by the total new CHWs trained each year. In 2012, it cost US$365 to train and equip one CHW.

Recurrent Costs

Table 10 shows the total recurrent costs for the iCCM program, based on the actual numbers of services provided in 2012. Since the CHWs are volunteers and receive no salary, the only direct variable costs of iCCM treatments are medicines. Costs of management, supervision, meetings, trainings, and program overheads do not vary directly by service volume. The total recurrent cost for 2012 was US$322,123. Overall, the majority of iCCM program expenditure was categorized under "Other iCCM Program Costs", with a total of US$151,748 which was 47% of the total recurrent costs. This cost category comprises fuel and vehicle maintenance costs, and overhead costs (operating costs of offices in Kono and Freetown, and communication costs for phone, internet, etc.).

The next biggest cost was US$65,647 (20% of total) for supervision followed by management with US$56,026 (17%). Medicines were estimated at US$48,702 (15%).

Table 10. Recurrent iCCM program costs, 2012 (USD)

	2012
Medicines	US$48,702
% of total cost	15%
Management	US$56,026
% of total cost	17%
Supervision	US$65,647
% of total cost	20%
Meetings	-
% of total cost	0%
Refresher trainings	-
% of total cost	0%
Other iCCM Program costs	US$151,748
% of total cost	47%
TOTAL	US$322,123

Management costs are generally defined as central level or partner organization salary costs for staff involved in managing the iCCM program. This staff does not directly supervise CHWs, but rather provides support to the iCCM program, such as organizing trainings, attending technical working group meetings, or overseeing medicine supply chains. These costs are calculated by applying a percentage of time spent on iCCM management to the total salary for each staff member. For IRC in Sierra Leone, there are 6 iCCM officers who play a dual role, managing the program but also supervising the peer supervisors who oversee the CHWs. Therefore, we split the time and salaries of these staff equally between management and supervision. Other staff included under management are the iCCM coordinator, manager, M&E officer, and drivers.

Supervision costs are the costs of staff at the PHU and DHMT who provide supervision to the CHWs. The main supervisors to the CHWs are peer supervisors, former CHWs who are paid a stipend by IRC; they spend 100% of their working hours supervising CHWs.

Meeting and training costs are based on standard costs of per diems, transportation reimbursements, lodging, training materials, and other related costs. These costs were provided by IRC based on their training budgets.

Other iCCM Program Costs comprise two main costs – vehicle costs (fuel and maintenance), and overhead costs (office rental costs, communications, and support cost salaries including IRC Senior Management). Since the program's vehicles and motorcycles are used primarily to carry medicines to CHWs in hard-to-reach areas, the costs of drug transport are included within the "Other iCCM Program Costs."

Table 11 shows the average annual recurrent cost per capita by program year. The average cost per capita is calculated by dividing total recurrent costs by total population—expressed as both per capita for children 2-59 months and per capita for the entire population within the coverage areas. The average cost per child aged 2-59 months was US$10.20 in 2012 and the average cost per capita, all ages, was US$1.56. On average, the supervision cost per CHW was US$78 and the recurrent cost per CHW, calculated by dividing the total recurrent cost by the total number of CHWs each year, was US$383.

Table 11. Recurrent cost per capita and per CHW, 2012 (USD)

	2012
Total recurrent cost	US$322,123
Total iCCM cases treated	US$98,139
Average cost per capita (2–59 months)	US$10.20
Average cost per capita (total population)	US$1.56
Supervision cost per CHW	US$78.15
Recurrent cost per CHW	US$383.48

Table 12 shows the recurrent cost per service in the iCCM package. As mentioned previously, direct costs, comprising medicine costs, are variable and increase with each additional service provided.

Indirect costs, such as management and supervision, do not vary with the volume of services provided, but may vary as a result of adding more CHWs or scaling up to additional districts. In 2012, the most costly service was pneumonia, at US$3.45 per service, followed by diarrhea at US$3.32 per service, malaria at US$3.27 per service, and referrals at US$1.08.

Table 12. Recurrent cost per iCCM service, 2012 (USD)

	2012
Malaria (fever)	3.27
Pneumonia	3.45
Diarrhea	3.32
Referrals	1.08

Conclusions

The goal of this study was to estimate the cost of IRC's iCCM project in Kono district, Sierra Leone in 2012.

The iCCM program in Kono covered a catchment population of 31,584 children between 2 and 59 months old with a package of iCCM services comprising treatment for presumptive malaria (fever), pneumonia and diarrhea – all provided free of charge. A total of 98,139 services were provided in 2012. This came to an average of 3.11 services per child per year, which was 38% of the expected total number of episodes per child. The level of utilization each service was quite high, compared with other country programs – 38% of expected malaria cases, 28% of expected diarrhea cases, and over 100% of expected pneumonia cases were treated (possibly due to overtreatment of non-confirmed pneumonia cases). The reported referrals rate was low at 1.6% of all cases seen. The iCCM services were provided by 840 voluntary CHWs, each covering an average catchment population of 38 children from 2-59 months, and each seeing an average of 2.3 cases per week.

The total recurrent cost of implementing the iCCM program was estimated at US$322,123. The largest cost elements were IRC's operating costs (47%), supervision costs (20%) and management costs (17%). Medicine costs were 15%.

The overall cost came to US$10.20 per capita (child 2-59 months) and the average cost per service was US$3.45 for pneumonia, US$3.27 for diarrhea, US$3.32 for malaria, and US$1.08 for referrals. It should be noted that all costs presented in this analysis are total costs and some of these costs are already funded through separate streams. For example, we include the time for staff at the PHU and DHMT levels who are involved in supervising the iCCM program, although their salaries are paid for by the government. The cost of replacing CHWs lost to attrition would be US$19,714. This is not included in the recurrent costs.

It is important to note that these are standard costs – i.e., the costs that should be incurred for providing the services. They are not the actual expenditures, with possible exception of some of the overhead costs. In the case of medicines, for example, the cost shown here is the cost of providing the

medicines needed for the numbers of services provided. It is not the actual expenditure on medicines. As a result it does not take into account possible shortages or stock-outs of medicines. This is especially important if the costs are used to compare with impact results, such as in cost per death prevented. In addition, we did not conduct any analysis of bottlenecks and do not know, for example, if there were medicine stock-outs during the year.

With utilization at 38% of estimated need, some increases in utilization could perhaps be achieved, depending on factors such as care-seeking behavior and medicine supplies. Reductions in unit costs would, therefore, probably need to come from lowering the fixed costs – IRC overhead costs, management and supervision costs. Most donor-funded pilot iCCM projects have high overhead, management and supervision costs – this is part of the investment in developing a viable program. If the program is taken over by the government these costs would be expected to fall significantly, for example with much-reduced overhead costs and by supervisors sharing the costs of visits across more community health activities.

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Annexes

Annex A. CBD Training Workshop and Provisional Timetable

Annex B. Zones, Health Centers and Sites Samples

Annex C. CHW Questionnaire

Annex D. CHW Patient Register

Annex E. CHW Drug Register

Annex F. Standard Treatment Guidelines

Annex A: CBD Training Workshop and Provisional Timetable 2012

CBD Training Workshop Provisional Timetable 2012

CCM Program, IRC Sierra Leone and Sierra Leone Ministry of Health and Sanitation

	9:00 – 11:00	11:00 –11:30	11:30 – 13:00	13:00 –14:00	14:00 – 17:00
DAY 1	Registration; Distribution of Materials Introductions, Norms, Expectations Program and Workshop Overview	BREAK	Pre-Test CBD Role and Ethics	LUNCH	Overview of Malaria, Pneumonia and Diarrhea
DAY 2	Sign-in Recap of Day 1 Effective Communication	BREAK	Intro to Record-Keeping Danger Signs	LUNCH	Danger Signs
DAY 3	Sign in Recap of Day 2 Pneumonia	BREAK	Pneumonia	LUNCH	Pneumonia
DAY 4	Sign-in Recap of Day 3 Malaria	BREAK	Malaria	LUNCH	Diarrhea
DAY 5	Sign-in by 8:30 a.m. Putting It all Together	BREAK	Putting It all Together	LUNCH	Managing Medicines and Keeping Records
DAY 6	Sign-in Recap of Days 1-5	BREAK	Post-Test	LUNCH	Workshop Evaluation Closure

Annex B. Zones, Health Centers and Sites sampled for CHW Questionnaires

Chiefdoms	*PHU*	Community Health Sites
Nimikoro	Njala	Bongema I Foakor
	Bumpeh	Fandehun Kaipeya Yendema Woadeh Venima Bandafayie Fodaydu Kongowakoro
Nimiyama	Sewafeh	Njawama Kono Teiko Kamandaya Bassaya Village Ngawama Kono
Tankoro	Woama	Tangabu Mboama I Simbakoro Bendu Tankoro Nongokoro Foadu Koridu-Tankoro Moinmandu Moyima Senehun Koryadu
Kamara	Tombudu	Number 11 Teridu Kamara Kominja Wordu Maima I Maima II Gbmaima Kongofinja
Sandor	Yormandu	Kanama Yordu Dandayandu Tombu Madina Foyofayah Tegbadu Bendu I

Annex C. CHW Questionnaire

COMMUNITY HEALTH WORKER (CHW) QUESTIONNAIRE
CHW #
Date of interview:
Name of interviewer:
Location of interview:
Start time of the interview:
Name of CBD being interviewed:
Sex (Male/Female):
Name of village or community:
PHU:
Chiefdom:
District:
Province:
Month and year the person began working as a CBD?

Period of analysis:	
	Start Date (MM/YY)
	End Date (MM/YY)

A) Population served by CBD	
1)	What is the population of the households that you serve?
2a)	How many children (0-5 years) are included in this population?
3)	Is there more than one CBD working in this village?
3)	If yes:
3a)	Do you divide the population between the CHWs, or cover the entire population but alternate? How do they divide up the households in the village?
3a)	What is the population of the households that the other CBD serves?
B) CBD Time	
1)	In general, how many hours per day are you available to work as a CBD?
2)	In general, how many days per week are you available to work as a CBD?
3)	In general, do you work as a CBD all year, or are there days/months that you take off?
Fill out ANNEX 3: CBD TIME by asking the following questions	

1)	Please list all the activities that are typically done as a CBD? (If they are not already listed in ANNEX 3 then add to the blank spaces, rows 18-21)
2)	Was the last week a typical week for you as a CBD?
	If yes, proceed with the following questions. If no, ask them to think of a 'typical' week in terms of their activities as a CBD.
3)	List the different types of activities you did as a CBD in the previous week:
3a)	How many hours did you take for each activity?
3b)	For each activity, where did you go?
3c)	For each activity, how long did it take to travel (i.e. to or from a household)?
3d)	For each activity, was this specifically relating to iCCM, or just for CBD activities in general?

C) Supervision and Reporting	
1a)	How often does the CBD supervisor come to visit you?
1b)	How often does the CBD supervisor come to your house to collect your reports?
2)	With what frequency do you fill out regular CBD or iCCM activity reports?
3)	With what frequency does your supervisor provide you with drugs and supplies?
4)	How long does it take to go to the health center, and how far away is it? (one way)
5)	Do you spend the whole day to go to the health center (round trip)?
6)	When was the last time you received a supervision visit by your supervisor?

D) Meetings and Trainings	
Fill out ANNEX 2. Meeting and Training by asking the following questions:	
1)	Please make a list of the different trainings and meetings you had in the last year (2012).
2)	For each training (fill out in the appropriate section if it's a meeting or a startup or refresher training)
2a)	Who was the meeting or training funded by? (if the CBD doesn't know, leave blank)
2b)	Where was the meeting or training held?
2c)	How frequent is the meeting or training (if refresher)?
2d)	How long was the meeting or training?
2e)	Was the CBD paid a per diem or incentive? If yes, how much?

E) iCCM Services	
1)	What iCCM treatments are you able to provide now?
1a)	Were you providing the same treatments in 2012?
2)	For each iCCM service, list the approximate amount of time that is required to provide the treatment:

2a)	Diarrhea
	Treatment
	Follow-up
2b)	Pneumonia
	Treatment
	Follow-up
2c)	Malaria
	Treatment
	Follow-up
2d)	Malnutrition Screening
	Assess/ Diagnose
2e)	Referrals
	Treatment
	Follow-up
	Accompanying referral
2f)	(Other treatment, if provided)
	Treatment
	Follow-up
3)	When a patient is referred to the health center, do you record the patient in your register?
3a)	Do you accompany the patients to the health center?
3b)	Do you provide an initial treatment to the patient before referring them?
4)	How do you test to make a diagnosis for pneumonia?
4a)	If the test is negative, what do you do? Do you provide any treatment?
4b)	If the test is negative, how do you record the patient in your register?
4)	How do you test to make a diagnosis for malaria?
4a)	If the test is negative, what do you do? Do you provide any treatment?
4b)	If the test is negative, how do you record the patient in your register?

F) Periodic CBD activities	
1)	Do you participate in any periodic activities relating to community health, such as vaccination campaigns or distribution of insecticide-treated nets?
2)	If yes, list the events and their frequency.

G) Medications, supplies and equipment	
1)	For the following medications, have you received these in the past year, and have you had any issues with stock-outs (more than 7 days)?
a	ORS
b	Zinc
c	ACT infant

e	ACT toddler
e	Amoxicillin
f	
g	

2)	For the following equipment, have you received these, and have you had any issues with stock-outs?
a	Medicine Box
b	Respiratory Timer
c	Beads (Infant and Toddler)
d	Mid-Upper Arm Circumference (MUAC) Tape
e	Patient Register
f	Referral Cards
g	Pictograms / job aid
h	Flashlight / torch
i	Jugs (ORS)
j	Spoons
k	Cups

H) Payment and Incentives	
1)	Do you receive any forms of payment for your services as a CBD?
1a)	If yes, from what source is the payment, and how much?
2)	Do you receive any incentives "in kind" for your services as a CBD? (buckets, t shirt, umbrella, sleeping mats, etc.)
2a)	If yes, from what source is the incentive, and how much?
3)	Do you receive any incentives from your community?
3a)	If yes, what incentives do you receive?

	End time of the interview:
	Duration (minutes / hours) of the interview:

Annex D. CHW Patient Register

Community Health Worker (CHW) Patient Register

Community Health Worker (CHW) Program

Name of CHW: _____ **Sex of CHW:** _____

CHW #: _____ **Village:** _____

PHU: _____ **Chiefdom:** _____

Month: _____ **Year:** _____

No.	Date	Patient's name	Village	Sex		Age				MUAC			Fever				Diarrhea		Cough		Breaths per minute	Pneumonia	Referred	Reason for referral
						2-11 months	1-5 years	6-13 years	14 years or above	R	Y	G	< 24 hours	>24 hours	RDT +	RDT –	< 24 hours	> 24 hours	< 24 hours	> 24 hours				
1.																								
2.																								
3.																								
4.																								
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								

Annex E. CHW Drug Register

Community Health Worker (CHW) Drug Register

Community Health Worker (CHW) Program

Name of CHW: _____ **Sex of CHW:** _____

CHW # _____ **Village:** _____

PHU: _____ **Chiefdom:** _____

Month : _____ **Year :** _____

No.	Date	Patient's name	Fever					Diarrhea		Pneumonia
			RDT	ACT 25	ACT 50	ACT 100	ACT 200	Zinc	ORS	Cotrimoxazole
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										

For Supervisor's Use Only

Drug Report	RDT	ACT 25	ACT 50	ACT 100	ACT 200	Zinc	ORS	Cotrimoxazole
Balance brought forward from the previous month								
Amount added during the month								
Amount used during the month								
Balance at the end of the month								
Stockouts (0s)								

Annex F. Standard Treatment Guidelines and Medicine Costs (USD)

The following standard treatment guidelines were developed in consultation with IRC staff in Sierra Leone. The estimated time per consultation, treatment, and follow up is an average based on responses from CHWs interviewed. Drug costs are actual costs as reported by IRC; IRC led iCCM drug procurement and distribution in 2012.

Drug	Number of times/day	Number of days	% of cases treated	Units per dose	Total units	Unit cost	Total cost
Diarrhea (78 minutes per case—consultation, treatment, and follow-up)							
ORS	1	3	100.0%	0.33	1.00	0.22	0.22
Zinc (2-6 months) (20mg)	1	10	20.0%	0.10	0.20	0.16	0.03
Zinc (7-59 months) (20mg)	1	10	80.0%	0.10	0.80	0.32	0.26
Pneumonia (91 minutes per case—consultation, treatment, and follow-up)							
Cotrimoxazole (2-11 months) (120 mg)	2	5	22.6%	0.10	0.23	0.13	0.03
Cotrimoxazole (12-59 months) (480mg)	2	5	77.4%	0.10	0.77	0.20	0.15
Malaria (74 minutes per case—consultation, treatment, and follow-up)							
ACT (2-11 months) (25mg)	2	3	22.6%	0.17	0.23	0.50	0.11
ACT (12-59 months) (50mg)	2	3	77.4%	0.17	0.77	0.65	0.50