CHW Peer Support Groups for Integration of Health Service Delivery and Improved Performance: Learning from a Peer Group Model in Rwanda

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This paper is part of a series of papers on the Community Case Management (CCM) in the context of community health in Rwanda, and the experience of the Kabeho Mwana Child Survival Project in Rwanda (2006-2011).

Abstract

Community Health Workers (CHW) peer groups have been shown to facilitate CHW capacity building, increase demand for CHW services and strengthen the link between health system and community. The Rwandese community health strategy centers on the role and functions of CHWs, but does not include peer support groups. The Kabeho Mwana child survival project in Rwanda (2006-2011) formed 660 peer support groups with a total 13,166 CHWs responsible for integrated CCM of child illness and health promotion.

We review the Kabeho Mwana final evaluation, routine monitoring data, and special studies in the grey literature to: 1) describe the CHW peer support group model implemented under the Kabeho Mwana project and how it fits into the default national CHW structure; 2) synthesize lessons learned about integrated community service delivery using CHWs (re: performance, supervision and social capital); and 3) draw preliminary conclusions about the model's potential to improve CHW service delivery and health promotion in Rwanda and elsewhere, as compared to CHWs working more independently.

Introduction

Community Health Workers (CHWs) are often an essential health system element for the delivery of primary healthcare in developing countries. In Rwanda, CHWs are central to the Ministry of Health's Community Health Strategy. As of July 2012, there were 45,011 CHWs in Rwanda, collectively tasked with providing a comprehensive package of preventive, curative, and health promotion services at the village level[1]. The CHW strategy in Rwanda is of particular interest because integrated community case management (CCM) initiatives implemented at scale are rare, especially in Africa[2]. This paper describes the specific way of organizing and mobilizing CHWs, which was used by the *Kabeho Mwana* (Life for a Child) project implemented from 2006-2011 in six districts of Rwanda (over 18% of the country's population) with the primary purpose of scaling up CCM of malaria, diarrhea and pneumonia by CHWs in partnership with the Ministry of Health[3]. As part of the project's community mobilization and behavior change strategy, Kabeho Mwana trained and formed a total of 13,166 CHWs in 660 CHW peer support groups (PSGs).

The purpose of this paper is 1) to describe the CHW peer support group (PSG) model implemented by Kabeho Mwana; 2) to synthesize lessons learned about integrated community service delivery using CHWs; and 3) to draw preliminary conclusions about the PSG model's potential, regarding CHW performance, supervision and social capital, to enhance CHW service delivery and health promotion in the Rwanda Community Health System as compared to CHWs working without PSGs.

Background

CHW groups, varied in form and nomenclature, contribute to community health programs in a number of settings. They have been shown to facilitate CHW capacity building, increase demand for CHW services and strengthen the link between health systems and communities[4][5]. CHW peer groups can provide a means to hold CHWs accountable, to train and update skills, to provide clinical supervision and guidance, to serve as a communications and supply link, and to collect, analyze and apply the use of community health data[6]. The way CHWs are trained, managed and supported is central to the quality of health services they deliver[7].

Peer interaction can be a critical motivator for CHWs; one way to foster this is through group meetings that create a supportive environment, facilitate the sharing of experiences and reinforce

[1] Personal correspondence with Cathy Mugeni, Head of Community Health Desk; Rwanda Ministry of Health
[2] Management of Sick Children by Community Health Workers (2006) UNICEF and WHO.
[3] Weiss, J; Langston, A; Sarriot E; Pullum, T; Landegger, J; Morrow, M; Luz, R; Mugeni, C; Tsuma, L. Impact Evaluation of the Kabeho Mwana Child Survival Project in Rwanda using Demographic and Health Survey Data, *forthcoming*.
[4] Management of Sick Child Illnesses by Community Health Workers (2006). UNICEF and WHO.
[5] Wagner, A. (2012). Community Care Coalition (CCC) Five Country Status Review 2012. Draft Report: World Vision.
[6] Incentives and Disincentives to Community Contributions to CHW Performance (Bhattacharyya, Winch, LeBan, & Tien, 2001)
[7] Rifkin, S. (2009). Lessons from community participation in health programs: a review of the post Alma-Ata experience. *International Health, 1*(1), 31-36.

commitment[8]. CHW associations are among key non-monetary incentives for CHWs; they also factor positively into community motivation to support and sustain CHWs[9]. The more non-monetary support CHWs receive, the more likely a program will be successful[10].

This paper focuses on the organization of CHWs into PSGs, implemented by Kabeho Mwana. It describes and draws lessons from the PSG model, which grew out of the Care Group model, modified to align with MOH policies and preferences in Rwanda (see textbox).

From Care Groups to CHW Peer Support Groups

World Relief first developed the Care Group Model in 1995 for training and supervising volunteer community health educators in Mozambique[1] and used it in a subsequent project with documented reductions in infant and under-five mortality rates of 49% and 42%, respectively.[2] To date, the model has been used in various forms by 23 organizations in nearly as many countries, including Rwanda.[3] As originally designed, the model achieves saturation coverage of beneficiaries through a network of volunteers in which one volunteer mother is selected from every ten households. Facilitators train the volunteers in Care Groups with 8-12 peers, meeting twice per month. Care Group volunteers replicate health lessons with their neighbors in addition to reporting on vital events detected during twice monthly home visits. *Kabeho Mwana* modified the Care Group Model in response to request from the Rwanda Community Health Desk to support scale up of its CHW strategy. In the pilot phase, "modified Care Groups" were comprised of CHWs trained in CCM and behavior change communication (BCC), plus additional volunteers to assist with BCC home visits. This supported the official CHW strategy while reducing the number of households each group member was responsible for visiting. However, upon scale up, the project was asked to work with CHWs exclusively. At the time, that included 5 CHWS per village (2 of the 5 have since been dropped from CHW policy). This paper uses the term CHW Peer Support Groups, as the final design was no longer consistent with established criteria for Care Groups.[4]

[1] Laughlin, M. *The Care Group Difference: A Guide to Mobilizing Community-Based Volunteer Health Educators*. Eds. K. Bradbury, P. Ernst, R Heidkamp, W Long, M Morrow, L Nghatsane, and O Wollinka. Produced by World Relief with partial support from CORE and USAID, 2004.

[2] Edward, A., Ernst, P., Taylor, C., Becker, S., Mazive, E., & Perry, H. (2007). Examining the evidence of under-five mortality reduction in a community-based programme in Gaza, Mozambique. *Trans R Soc Trop Med Hyg, 101*(8), 814-822.

[3] Source: http://www.caregroupinfo.org/blog/implementors.

[4] Care Group Criteria: http://www.caregroupinfo.org/docs/Care_Group_Criteria_November_12_2010.pdf

Methods

This paper combines participant observations from designers and implementers of the CHW PSG model, with project monitoring and routine monitoring data, findings from primary and

[8] Incentives and Disincentives to Community Contributions to CHW Performance (Bhattacharyya, Winch, LeBan, & Tien, 2001)

[9] Ibid (Winch)

[10] Management of Sick Child Illnesses by Community Health Workers (2006). UNICEF and WHO.

secondary data collected as part of the Kabeho Mwana final evaluation[11], and other available studies. Companion documents in this series present greater details about the overall project, its achievements and impact, the scale up of CCM in Rwanda and questions of sustainability[12]. The final project evaluation, led by an external evaluator in August 2011, used key informant interviews and focus group discussions to complement quantitative data from the project and MoH, including baseline and final population health surveys.

Description: PSG model within the Ministry of Health CHW structures

MoH Community Health Structure – The Rwanda MoH has established a national community health program consisting of four levels: central, district, sector, and community, as illustrated in the shaded elements of Figure I[13]. At village level there are three CHWs: two *binômes* (male-female team) who provide CCM of malaria, diarrhea, and pneumonia as well as community-based distribution of family planning methods and preventive measures against tuberculosis and HIV[14]; and one *Agent de Sante Maternelle* (ASM) who focuses on maternal and newborn health[15]. By MoH design, CHWs are elected by the community and must be literate, with primary school education. They receive modest remuneration from per diem during official training and from performance-based financing (PBF) via CHW cooperatives. In theory, within the existing MoH structure, all CHWS are responsible for BCC on health promotion and disease prevention related to their area of practice but the natural focus is on curative activities.

All CHWs are organized into 100-250 member cooperatives through which CHWs meet quarterly at the health center for information sharing and reporting on a list of indicators eligible for PBF, including number of community treatments provided and number of referrals conducted[16]. The cooperative is led by the Cooperative President, a CHW *binôme* elected from amongst the *binôme*. The Cell Coordinator, also a *binôme* elected by his or her peers, is responsible for compiling and submitting CHW reports, including drug quantification and requisition to the health center. In addition, the Cell Coordinator provides peer supervision to fellow CHWs and liaises with the health center-based *Chargé de Santé Communautaire* (Community Health In-Charge); the formal CHW supervisor.

Peer Support Group Model – Within the framework of the national structure, Kabeho Mwana introduced the PSG model to coordinate and cross-train CHWs in different BCC interventions. Peer support groups averaged 20 CHWs from four to five neighboring villages who met at least once a month for training on health topics and BCC messages, joint planning of home visits and

[11] Sarriot, Eric; Final Evaluation Report of the *Kabeho Mwana* (Life for a Child) Expanded Impact Project on Child Survival. December 2011.
[12] Sarriot, Tsuma, Langston, Weiss, Landegger, Mugeni et al
[13] Courtesy of Cathy Mugeni, Head of Community Health Desk; Rwanda Ministry of Health
[14] Responsibilities of the *binômes* evolved over the life of the project – family planning was added in some districts in the final year and not until after in others; HIV and TB prevention were also added later.
[15] Notable variations to this existed during the life of Kabeho Mwana. Two additional CHWs responsible for palliative care were also elected in some districts but never formally trained by the MOH. The village representative for Social Affairs initially was included in the CHW cooperative but later was removed, despite related responsibility for health behavior change. Kabeho Mwana included all of these individuals in its peer support groups, in addition to the *binome* and *ASM*.
[16] Paulin Basinga, et al. Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation. Lancet 2011; 377: 1421–28.

other health promotion activities, and to discuss and compile monthly reports related to both curative and preventive functions. Each CHW visited approximately 10 households per month to deliver messages on healthy family practices outlined at the PSG meetings and check for the existence of kitchen gardens, appropriate latrines, hand-washing stations (tippy-tap), rubbish pits and treated bed nets.[17] On average, 356,387 household visits were conducted per quarter during the last four quarters of the project[18]. In addition to household visits, PSG members were still expected to perform their regular functions of referring or treating children under five (*binômes*), accompanying pregnant women to the health facility (*ASM*), and participating in community mobilization activities. The non-shaded area of Figure I illustrates the main structural difference between the PSG model and default national CHW structure.

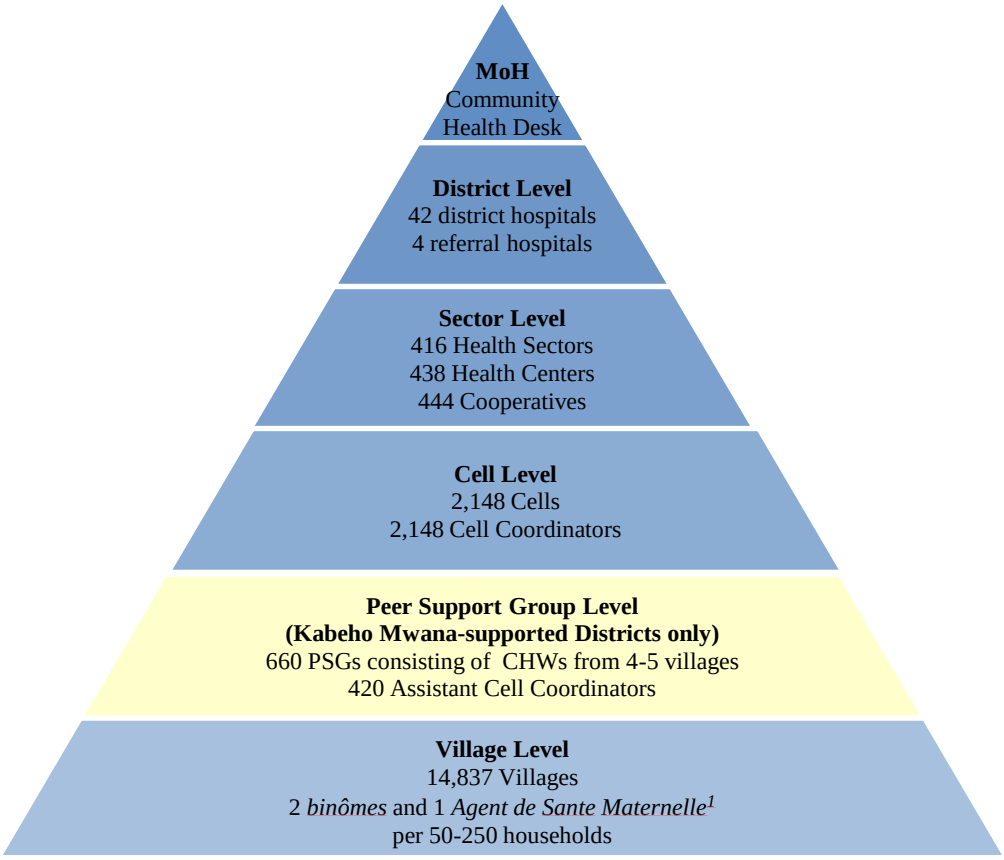

Figure I: Rwanda community health structure, with Kabeho Mwana PSG model inserted
[1]In two districts, Kabeho Mwana included two additional CHWs (designated for chronic disease, per MOH policy at the time) for a total of five CHWs at village level. These two CHWs were dropped from policy post-project.

Project inputs for PSG formation and coordination – Kabeho Mwana assisted the MoH to implement its CCM strategy by supporting and working through MoH staff and structures wherever possible. However, three project officers per target district catalyzed activities in their respective domains (quality assurance, monitoring and evaluation, and community mobilization). In addition, three project promoters per district supported the formation and training of PSGs.

[17] Sarriot, Eric; Final Evaluation Report of the *Kabeho Mwana* (Life for a Child) Expanded Impact Project on Child Survival. December 2011.
[18] Kabeho Mwana EIP Project Community Mobilization Database, September 2011.

All 660 groups were trained in BCC methods and the national curriculum for community-integrated management of childhood illnesses (c-IMCI) that the project helped develop. The high ratio of PSGs per promoter (36-37:1) necessitated reliance on CHW Cell Coordinators and Assistant Cell Coordinators for PSG leadership and facilitation, under the supervision of the In-Charge of Community Health. Cell Coordinators were unremunerated beyond the standard incentives for CHWs. Because Cell Coordinators were already tasked with collecting information from and supervising CHWs, the additional work to lead PSGs was offset by facilitating these functions. Use of motorbikes from the project aided the promoters in implementing their activities.

Relationship of PSG model to CHW cooperative structure – Creation of the smaller PSGs in addition to the larger, nationally institutionalized cooperatives could appear redundant and as a possible source of CHW meeting fatigue. However, discussions with cooperatives in the six project districts during the final evaluation convincingly established that CHWs considered the cooperatives and PSGs as different, complementary levels in a consistent system of organization and CHW support. A cooperative member in Nyaruguru noted that PSGs *"allow us the chance to solve many problems before we attend the cooperative….members talk freely, more than in cooperatives."* Even CHW members of the most functional cooperatives commented that PSGs provided a level of social capital and proximal trust.

In comparison to the CHW cooperatives, the smaller PSGs facilitated greater interaction between individual CHWs and their supervisors and placed specific emphasis on health promotion and community mobilization. The final evaluation noted the PSG model appeared to be well-integrated into the existing community health structure, showing potential for replication and scale-up.

Achievement and Performance

Results associated with PSG model – Kabeho Mwana districts experienced significant increases in multiple indicators related to disease prevention, health promotion and appropriate care seeking. Community health worker repetition of key health promotion messages during home visits in Kabeho Mwana districts was associated with notable increases in desired behaviors.

Table I presents indicators from the project's baseline and final knowledge, practices and coverage (KPC) surveys with statistically-significant increases related to disease prevention and healthy behaviors such as appropriate hand washing, point of use water treatment, Vitamin A and care-seeking and indicators related to treatment such as access to malaria and pneumonia treatment and sick child care practices for diarrhea. Separate analysis illustrated the validity of the KPC as a method for the collection quality data[19]

Indicator	Baseline	Final
% of mothers of children age 0-23 months who live in households with soap at the place for hand washing and who washed their hands with soap at least 2 of the appropriate times during the last 24 hours	2% (CI 1-4%)	19% (CI 11-26%)

[19]Langston, A; Prosnitz, D; Sarriot, E. Cross-validation of Knowledge, Practice and Coverage (KPC) child health survey coverage estimates and Lives Saved Tool (LiST) mortality modeling, with estimates from the Rwanda Demographic and Health Survey (RDHS). *Forthcoming*.

% of households of children age 0-23 months that treat water effectively	31% (CI 27-35%)	65% (CI 56-74%)
% children 6-23 months who received high-dose Vitamin A supplementation within the last 6 months	66% (CI 61-71%)	86% (CI 78-94%)
% children under five with fever in past 2 weeks who received appropriate anti-malarial treatment within 24 hours of onset of fever	20% (CI 13-23%)	43% (CI 35-51%)
% children under five with diarrhea in past 2 weeks who received zinc treatment	5% (C 2-8%)	22% (CI 15-30%)
% children under five with diarrhea whose caregiver offered more liquid than usual to their child	36% (CI 30-43%)	57% (CI 48-66%)
% children under five with diarrhea whose caregiver offered the same or more food than usual to the child	22% (CI 17-28%)	57% (CI 48-66%)
% children under five with cough or respiratory difficulty in past 2 weeks who were taken to an appropriate healthcare provider	13% (CI 9-18%)	63% (CI 51-74%)

Table I: Indicators with statistically-significant increases between baseline and final Knowledge, Practice and Coverage surveys

Logistical regression analysis of the 2005 and 2010 Rwanda Demographic and Health Surveys (DHS) evaluating project impact demonstrated that notable improvements in treatment-seeking

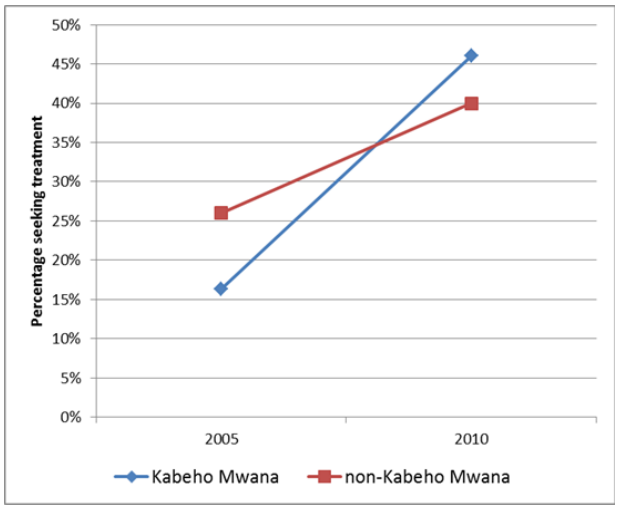

Figure II: % of children <5 with fever, diarrhea or pneumonia for whom treatment was sought from a health facility or CHW

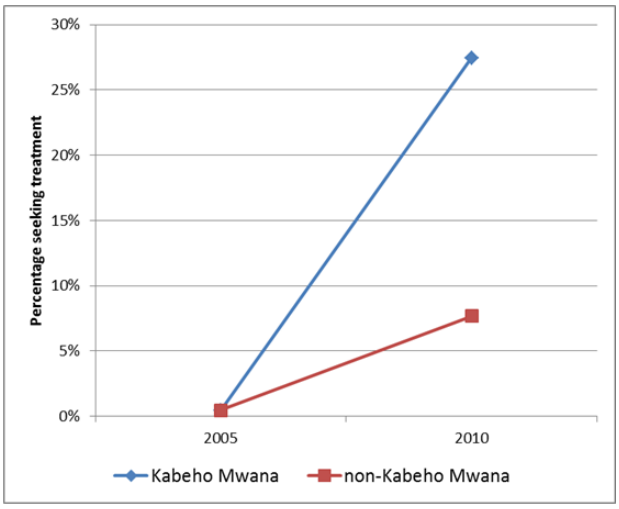

Figure III: % of children <5 with pneumonia for whom treatment was sought from a CHW

occurred between 2005 and 2010 across all districts in Rwanda. However, the increases were significantly greater in PSG districts than non-PSG districts[20]. Figure II shows treatment-seeking from any provider[21] for fever, diarrhea, and pneumonia combined increased from 16% to 46% in project districts, vs. 26% to 40% in non-project districts (adjusted OR 2.24 $p \leq .001$). Figure III presents the significant increase of treatment-seeking for pneumonia from CHWs (adjusted OR 6.39 $p \leq .05$). There was no significant difference for treatment seeking from CHWs for the three conditions combined likely because of the small sample sizes when the indicators were limited to

[20] Weiss, J; Langston, A; Sarriot E; Pullum, T; Landegger, J; Morrow, M; Luz, R; Mugeni, C; Tsuma, L. Impact Evaluation of the Kabeho Mwana Child Survival Project in Rwanda using Demographic and Health Survey Data, *forthcoming*.

[21] Excludes pharmacy, shop, and traditional practitioner; Demographic and Health Survey definition, 2010.

CHWs. Treatment-seeking for diarrhea and fever from a CHW could not be calculated separately because of changes in the way the questions were asked in the two surveys[22].

Integration of preventive and curative services – The PSG model was intended to achieve the project's behavior change and community mobilization objectives. However, PSGs also proved to be an effective mechanism for the integration of service delivery with health promotion activities at village level[23]. A CHW from Nyamagabe highlighted the relationship between CHW curative and preventive functions: *"At the beginning of interventions we had more diarrhea cases to treat, three per week…no households had handwashing, dish racks and kitchen gardens, now almost all households have them."* Another CHW in Kirehe mentioned that following a discussion at the PSG regarding consecutive months of increased fever cases seen by CHWs, "*we took the decision to sensitize about ITN use and clearing the brush for malaria prevention."* By the end of the project, PSG members became active advocates for healthy behaviors, using treatment data to better target mobilization.

Quality improvement initiatives of PSG model – Monthly PSG meetings provided a platform for supervision, contributing to CHW performance in the form of productivity and reporting.

Supervision

Supervision within the PSG model can be considered at three levels: 1) The Community Health In-Charge from the facility was expected to visit each CHW in their respective cell each quarter to check CHW drug stocks, ensure appropriate storage and drug management and review the CHW register for appropriate treatment; 2) The Cell Coordinator was to conduct peer supervision visits to all CHWs in the cell on a monthly basis; 3) Informal peer supervision took place in the context of problem solving during monthly PSG meetings.

With support from Kabeho Mwana in 2010, the MoH conducted an evaluation of its community health program in 17 districts and found no difference in the frequency of supervision visits from the In-Charge[24]. In project and non-project districts, 75% (643/858) of CHWs reported receiving at least one supervision visit from the In-Charge in the previous three months. However, the same 2010 MoH evaluation yielded a statistically significant difference between supervisory visits provided by Cell Coordinators in Kabeho Mwana districts, where the PSG model was in place: 91% (356/391) of CHWs in project districts had been supervised by a Cell Coordinator over the previous three months compared with 80% (374/467) in the non-PSG districts[25].

Qualitative research from the final evaluation highlighted that barriers to consistent supervision by both Community Health In-Charges and Cell Coordinators were lack of sufficient time, transport, and funding for alternative transport. Peer support groups lessened these barriers by enabling supervisor access to CHWs at an intermediate level between facility and community.

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[22] Weiss, J; Langston, A; Sarriot E; Pullum, T; Landegger, J; Morrow, M; Luz, R; Mugeni, C; Tsuma, L. Impact Evaluation of the Kabeho Mwana Child Survival Project in Rwanda using Demographic and Health Survey Data, *forthcoming*.

[23] Sarriot, Eric; Final Evaluation Report of the *Kabeho Mwana* (Life for a Child) Expanded Impact Project on Child Survival. December 2011.

[24] Mitsunaga T, Mugeni C, Ndabarora E, Rukundo A, Mukerabirori A, Langston A, De Naeyer, Ngabo F.; *Community case management of under-5 illnesses: results from a rapid evaluation of Rwanda's national program.* http://spssms.msh.org/products/cIMCI_rapid_evaluation_report_draft_031011.pdf

[25] Ibid

The In-Charge from Nyamasheke noted, from a supervisor's perspective, *"the smaller the group, the easier it is for messages to pass and recommendations are taken down to the cell level where follow up is easier."*

CHW coordination, particularly related to BCC messaging, was simplified since CHWs could discuss and plan together at the PSG, rather than waiting for the Cell Coordinator or In-Charge to visit and direct them individually. A Cell Coordinator in Nyaruguru described the PSG as a "*good opportunity to discuss reports, take action depending on the results such as malnutrition or bad hygiene."* A Cell Coordinator from Gisagara noted: *"If we find the CHW not treating well, we continually reinforce his capacity during regular supervision and during trainings and meetings."*

The third level of supervision, informal peer supervision, proved to be a unique and valuable derivative stemming from PSGs. Health facility personnel testified that peer supervision of CHWs helped to compensate for health facility staff limitations. The Medical Director in Nyamasheke supported this assertion, citing improvement in CHW support under the PSG model compared to the default structure: *"there is a difference since establishment of [PSGs], members train each other, self control; and do reports. For sustainability, [PSGs] are more appropriate to encourage ownership because you can follow up everyone regularly at a lower cost."*

Productivity

CHW productivity, as defined by household visitation rates for health promotion activities and the number of treatments administered by CHWs, was greater in districts where PSGs existed. The CHWs in Kabeho Mwana districts averaged 44 visits per village per month compared to 10-30 visits per village per month in a non-project district[26]. During the second quarter of 2011, CHWs in project districts visited an average of 85.3% (4180/4899) of all households with children under five each month[27]. A CHW in Nyaruguru explained that *"mobilization at households is not so difficult since the work is shared between members."* A CHW in Kirehe echoed this sentiment, noting that PSGs gave CHWs the ability to quickly access a large population with coordinated messages.

CHW activity was also high on the curative side. During the 12 month period prior to the final evaluation, Kabeho Mwana-supported districts delivered about one third of community treatments in all of Rwanda for pneumonia (28%), diarrhea (31%) and malaria (34%), despite representing just 19% of the national target population for CCM[29]. Table II presents the total number of treatments given by CHWs in the six Kabeho Mwana districts during the life of the project.

Condition	Fever	Diarrhea	Pneumonia
Treatment	627,848	96,647	86,236

Table II: Total CHW treatments from 10/2006–9/2011[28]

Reporting

Community health worker data reporting in Kabeho Mwana districts was high. Cell Coordinators submitted their reports, specifically those on BCC activities, 93% (4,294/4,637) of the time[30].

[26] Tsuma, L; Mugeni, C; Weiss, J; Unfried, K; Luz, R; Sarriot, E. What we have learned about factors that support the Community Case Management program going to scale and remaining at scale in Rwanda? *Forthcoming.*
[27] Kabeho Mwana Community Mobilization Database, June 2011
[28] Kabeho Mwana Project Database, September 2011
[29] Data available courtesy of Cathy Mugeni and Erick Gajui

While compensation from PBF likely played a role in the high levels of reporting, qualitative findings from the final evaluation also suggest that regular interaction between CHWs and their supervisors during the PSG meetings eased the burden of work related to compilation of reports, resolution of discrepancies, and timeliness. In contrast, the default structure was not conducive to anything beyond data aggregation.

Social capital derived from the PSG model – Group size, regular meetings, and team focus on CHW performance improvement influenced multiple, mutually reinforcing, dimensions of social capital: trust, accountability, and motivation.

Trust

PSGs allowed for frequent interaction between members, experience sharing, and opportunities for cross-learning, ultimately resulting in a sense of camaraderie between members. Trust between PSG members was demonstrated through initiation of and participation in rotating group savings activities. Group members contributed personal finances at each meeting, entrusting their investment to the group and to those approved to take out micro-loans. Participation in the savings activity and access to micro-loans was seen as expression of trust as much as it was cited as a benefit to participation in PSGs. These activities were complementary to the business activities of the cooperative, suited to the smaller group size. Kabeho Mwana did not formally train the PSGs in village savings and loan methods although advice was provided upon request. Rather this was a group-initiated activity, underscoring its value to participants.

Accountability

The solidarity between CHWs in PSGs meant no CHWs wanted to under-perform. This level of commitment coupled with the transparent nature of the PSG discussions, facilitated efforts to hold CHWs accountable. A cell coordinator in Ngoma commented on the sense of collective and individual accountability in PSGs versus cooperatives: *"The more CHWs are present, the less they listen; but in a small group like the [PSG] their attention increases and they receive messages…things work well because there is a small group so results are more visible because everyone assesses their neighbor's performance."* Discussions with Cell Coordinators cited examples where CHWs who were not committed and failed to model healthy behaviors were replaced by the PSG. The MCHIP comparison study report found that CCM activities were better coordinated in Kabeho Mwana districts since there was a level of peer support and the CHWs felt more accountable to the PSG[31].

CHW motivation

Productivity, modeling of positive behaviors and CHW retention can be seen as proxy measurements for CHW motivation. The energy multiplying effect of joint planning and distribution of community mobilization tasks amongst PSG members kept CHWs engaged, productive in both preventive and curative activities, and committed to perform. Many CHW respondents recalled being motivated to pool resources to buy key household items, like soap, needed to model the target behaviors for their communities. Attrition of *binomes* in PSG areas was very low at1.2%; (74/6,168), ranging from 0.15% (1/664) in Nyaruguru to 2.32% (28/1,206) in Nyamasheke[32]; not appreciably different from the national figure of 1% (2009, 2010, 2011)[33].

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[30] Kabeho Mwana cIMCI Bulletin Monitoring Database, (data between 7/2010 – 5/2011).
[31] Tsuma, L. Complementary Study for Expanded Impact CSHGP Project in Rwanda. 8/13/12 – 9/1/12.
[32] Kabeho Mwana Health Facility Assessment, 2011. *Attrition was examined over a 5.5 month period*.

The causes of attrition reflected life changes such as relocation, marriage or study opportunities more than dissatisfaction with terms of the CHW role.

Sustainability of PSG model – Although the PSGs fit within, and were complementary to, the existing system, Kabeho Mwana project staff facilitated their formation and training of Cell Coordinators and Assistant Cell Coordinators. Since the completion of the project, the MoH has been unable to give the same attention to Cell Coordinators and Assistant Cell Coordinators with regard to the PSGs. Kabeho Mwana partners conducted an informal rapid audit in September 2012 to identify how many PSGs were still active in the five districts where PSGs no longer received support[34]. In Nyamasheke district, 100% (100/100) of PSGs continued to meet on a monthly basis. In Ngoma district, over half of PSGs continued to meet monthly, but prioritized CHW reporting functions and group discussions focused on resolution of data discrepancies and finding solutions for CCM drug stockouts, with less emphasis on BCC. The PSGs in Kirehe district were still meeting often, though meetings mainly focused on CHW reporting functions, and home visits were still taking place in some health facility catchment areas. In Gisagara district, 70.3% (45/64) of PSGs met at least once during the previous quarter, while in Nyaruguru district, only 24.1% (26/108) had met. The functionality level of PSGs in Gisagara and Nyaruguru was largely split by health center catchment area, where either all the PSGs in a certain catchment continued to meet or none continued to meet.

Discussion

Findings from this review suggest that the PSG model introduced by Kabeho Mwana was effective for integrating health promotion with preventive and curative services, in addition to facilitating CHW supervision and performance improvement. Because the model adds a sub-level of organization to the default national CHW strategy, replication for scale up in Rwanda is conceivable, as is application of the concept in other settings with CHWs. While the review does not prove that the PSG is better than the existing structure, the model was effective, and quantitative and qualitative evidence highlights aspects of added value.

Limitations – This paper describes the Kabeho Mwana PSG, illustrates how PSGs may have contributed to improved aspects of CHW performance as well as overall service delivery results, and demonstrates how the PSG model may be integrated into the existing community health structure. The paper may be considered a retrospective case study; and therefore not an experimental or even quasi-experimental design. Limitations on the comprehensiveness and completeness of CHW performance data as well as the unavailability of comparison data with non-project districts are especially highlighted.

Organizing CHWs under the PSG model

Quality improvement

Compared with the default national structure, the smaller size of the PSG and the promotion of sharing and collective problem-solving fostered CHW learning and facilitated informal quality improvement initiatives. Regarding reporting, PSGs allowed Cell Coordinators and/or Assistant

[33] Data on received through email correspondence from Eliane Ndererimana

[34] The sixth district, Nyamagabe, was not included in analysis as PSG activities continue to be actively supported by follow-on project staff.

Cell Coordinators time to collect, review and discuss reports from all PSG members together at a single location, thus easing the work of supervisors related to reporting while likely affecting data quality and utilization positively as well. Over the course of the project, data from CHW reports was used to inform decisions made by the PSGs. Community mobilization efforts were often steered by CHW alerts on changes in the number of monthly cases and observational evidence on the lack of healthy behaviors noticed during household visits.

In terms of CHW supervision, though not at optimal levels, more supervision occurred where PSGs were established versus where they were not. The PSG structure boosted frequent, proximal interaction between CHWs and their supervisors, particularly the Cell Coordinators. The grouping effect of the model helped to reduce the amount of time spent and distance traveled for supervisors to interface with CHWs, thereby allowing for regular supervision and problem-solving in a smaller group setting. As a middle ground between facility and community, the PSG proved to facilitate the work of CHW supervisors, providing monthly opportunities for teaching and supportive supervision related to quality improvement.

In future projects, certain quality improvement initiatives could be leveraged, and studied, using the PSG model. For example, CHW task competency (e.g. use of: timer, MUAC, RDT) could be assessed and improved within the PSG structure. Stock outs could be minimizing by sharing inventory among peers at monthly meetings.

Integration of health promotion and CCM

The PSG model fulfilled its intended purpose to strengthen the health promotion and community mobilization functions of CHWs and integrate them into CCM. While all CHWs in Rwanda engage in BCC activities specific to their area of responsibility, CHWs in non-Kabeho Mwana districts did not have equivalent training or opportunities to mesh their preventive and curative functions at the community level. By including all CHWs across functions in the PSG and encouraging discussion and joint report reviews, the PSG model stimulated cross-learning and naturally linked the preventive and curative functions of CHWs. Emphasis on appropriate treatment-seeking by all CHWs during household visits and mobilization activities, regardless of cadre, was associated with the promotion of CCM and likely contributed to the notable increase in treatment-seeking behavior.

The presence and visibility of CHWs in their communities, through their home visits and community mobilization initiatives, may have also been a factor in the increased CHW utilization. Compared with the standard MoH structure where each type of CHW is supposed to reach the entire village with messages limited to their CHW function, PSG members divvied up village households amongst the group and worked cross-functionally with regard to BCC. This repeated, familiar contact with fewer households could have contributed to CHWs' ability to influence healthy behaviors in project districts.

Social capital

The sense of CHW solidarity encouraged through the smaller, dynamic PSG groups, where all members, regardless of function, aimed to improve key preventive and curative outcomes was the most unique aspect of the PSG model. In contrast to CHW cooperatives where the large size inhibited discussion and sharing, PSG CHWs could easily interact with their supervisors and peers. The PSG model formalized and facilitated peer 'sounding boards' where individual CHW challenges faced at the community level were discussed as a group and action was taken, often

jointly. The focus on CHW performance improvement, the level of peer support, as well as the levels of group and individual accountability fostered by the PSG proved to be motivating factors for CHWs.

Sustainability of PSG model in existing community health structure –The PSGs introduced by Kabeho Mwana fit within the existing national structure and served a complementary role to the CHW cooperatives. Though MoH community health policy has continued to evolve since the completion of the project, the foundation of the PSG model has largely remained in place, as have some of the benefits, particularly those related to reporting. Many MoH staff, both at the national and facility level, appreciate the advantages of the PSG model in terms of facilitating CHW supervision at a more accessible, intermediary point at cell level. Some Community Health In-Charges saw value in the PSG model and, based on findings from the September 2012 PSG rapid audit, chose to integrate it into the existing structure in their catchment areas, supporting Cell Coordinators and CHWs to continue meeting on a regular basis.

Key elements of the PSG model could easily be mandated, nationwide, within the framework of the existing structure. During the writing of this paper, the Head of the Community Health Desk described a plan to revise the CHW community mobilization and CHW supervision strategies to reflect the lessons learned under the PSG model.

Further research – The overall positive results of the Kabeho Mwana project suggest that the value of the PSG model in the Rwandan context should be further examined. The authors encourage additional studies where elements of the PSG model are tested against the conventional structure or alternative options for solving similar management issues. Study findings could provide valuable learning and orientation for the future of CHW programs. The authors identified key areas for further operations research and evaluation by the Rwandan MoH: 1) Maintaining the performance of CHWs in PSGs through continuous quality improvement, post Kabeho Mwana; 2) Replication of PSG model under alternative support mechanisms, particularly in districts struggling with CHW motivation, supervision, and community mobilization activities; 3) Cost-effectiveness of improving CCM performance and health promotion with different supervision strategies: combination of health facility supervision and peer-supervision versus health facility supervision; 4) Testing the expansion of PSG and CHW roles with the integration of new health initiatives, such as nutrition, against alternative CHW management and support mechanisms.

Conclusion

Compared to CHWs working independently, CHWs working together in groups develop a stronger commitment to implementing health activities and provide greater peer support to jointly find creative solutions to problems. The PSG model, introduced by the Kabeho Mwana project, served as a manageable and valuable sub-level of CHW organization that was associated with improved CHW performance, supervision, and community mobilization activities. Rwanda MoH stakeholders at all levels viewed the CHW PSG as an effective mechanism for the coordination of BCC message delivery, as well as a viable model for CHW peer support, aligned with MoH structures and policies. Community health work will continue and continue to evolve in Rwanda over the coming years; PSGs present a promising and scalable model for meaningful engagement of CHWs at the community level. This paper offered a detailed description of PSG

mechanisms and suggests important research directions to make the Kabeho Mwana experience benefit the long-term of community health work in Rwanda.