RWANDA

SC4CCM Project Endline Evaluation Report

October 2014

Supply Chains 4 Community Case Management

Milken Institute School of Public Health
THE GEORGE WASHINGTON UNIVERSITY

Rwanda

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The Improving Supply Chains for Community Case Management of Pneumonia and Other Common Diseases of Childhood Project is funded by the Bill & Melinda Gates Foundation under grant agreement no. OPP1002868, beginning November 2, 2009. The grant is implemented by JSI Research & Training Institute, Inc. The project aims to demonstrate that supply chain constraints at the community level can be overcome, and that doing so may yield significant improvements in the effectiveness, scale, and impact of iCCM. SC4CCM will identify, demonstrate, and institutionalize supply chain management practices that improve the availability and use of selected essential health products for treating children under five in community-based programs.

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Cover photo: A community health worker in Rwanda examines CCM products in his drug box

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Acronyms

ACT	Artemisinin-based combination therapy (Primo Jaune and Primo Rouge)
CCM	community case management
CC	cell coordinator
CHD	Community Health Desk
CHW	community health worker
cPBF	community performance-based financing
DCHWS	district community health worker supervisor
DHMT	District Health Management Team
DiD	Difference-in-Differences
DOV	day of visit
DP	district pharmacist
eLMIS	electronic logistical management information system
HC	health center
HCPM	health center pharmacy manager
IcSCI	Incentives for Community Supply Chain Improvement
IGA	income generating activity
LIAT	Logistics Indicators Assessment Tool
LMO	Logistics Management Office
M&E	monitoring and evaluation
MCCH	Maternal, Child, and Community Health
MOH	Ministry of Health
MPPD	Medical Procurement and Production Division
OFR	order fill rate
ORS	oral rehydration solution
PA	product availability
PBF	performance-based financing
PMP	performance monitoring plan
PPS	probability proportional to size
QC	quality improvement collaboratives
QIT	quality improvement team
RDT	Rapid Diagnostic Test (for malaria)
RSP	Standard Resupply Procedures
RSW	resupply worksheet
RWF	Rwandan Franc
SC	supply chain
SC4CCM	Supply Chains for Community Case Management
SMART	specific, measurable, attainable, relevant, time-bound

Acknowledgements

Over the five years of the SC4CCM project remarkable achievements have been made in Rwanda towards strengthening the supply chain for community health products. These achievements could not have been achieved without the support, dedication and collaboration of all the partners. In particular, the SC4CCM Project would like to acknowledge the hard work and commitment of the Rwanda Ministry of Health who supported the work from the outset and built a collaborative and cohesive environment among stakeholders to work towards one common goal. All MOH staff from the central, district, health center and community levels should be congratulated for their efforts in supporting the implementation of the standard resupply procedures, quality improvement teams and supply chain performance incentives – all aimed at improving the community health supply chain management system. The project would also like to acknowledge our partners in evaluation – the Rwanda School of Public Health, who managed the quantitative survey data collection for our baseline evaluation, and CRT Regional Ltd. who managed the quantitative survey for the midline and endline evaluations, and George Washington University staff who guided the design of the final qualitative case study and spent weeks in the field interviewing staff. The project would also like to acknowledge partners who have supported the scale up of the integrated training for community health workers, including the supply chain strengthening components: World Relief, Concern Worldwide, UNICEF, Rwanda Family Health Project, USAID, and i+Solutions.

Executive Summary

Background

In 2010, the Supply Chains for Community Case Management (SC4CCM) project, with funding from the Bill & Melinda Gates Foundation, set out to increase availability of key medicines and commodities for treatment and management of sick children at the community level in three sub-Saharan Africa countries, Malawi, Ethiopia and Rwanda. A baseline assessment conducted in the first year of the project (2010) in Rwanda identified that principal gaps in getting products to the community level were lack of standard procedures for calculating resupply quantities for community health workers (CHWs) and a lack of data visibility of CHW logistics data at all levels of the system. The baseline also found a number of challenges CHWs face in performing supply chain tasks effectively and consistently, such as lack of storage and remuneration for time and transport.

Based on these findings, the project partnered with the Community Health Desk (CHD) of the Rwanda Ministry of Health (MOH) to develop a new set of standard resupply procedures for the community level, to improve the supply chain and resupply process for providing health products to CHWs, using cell coordinators (CCs) as the primary actor in resupplying CHWs. Building on those resupply procedures, the project tested two interventions in 2012-2013 designed to further strengthen performance of community supply chains, and significantly improve product availability (PA) at the community level. One of the interventions tested used a proven quality improvement method (quality collaboratives or QCs) to strengthen community health worker (CHW) resupply procedures, and the other used supply chain performance incentives to motivate CHWs to perform supply chain tasks (incentives for community supply chain improvement or IcSCI) consistently and effectively. The testing period for these interventions was 12 months, from April 2012 to March 2013, after which the project conducted a midline evaluation to measure the extent to which the two supply chain interventions were carried out as planned, and what affect each one had in improving product availability at the community level.

After validating the midline findings, the MOH decided to scale up a package of community supply chain practices including the resupply procedures (RSPs), quality improvement teams (QITs), and a supply chain indicator for the community performance based finance system. The final year of the project was spent working with the MOH to support their efforts to scale, institutionalize, and sustain this package and ultimately, realize the benefits of an improved supply chain for the community level.

Before the SC4CCM grant closes in late 2014, the project conducted an endline assessment in Rwanda that systematically collected evidence on the project's objectives of finding effective supply chain solutions for CHWs in Rwanda. In addition, the endline evaluation allows SC4CCM to draw implementation lessons from the intervention scale up process and assess the progress made towards scale up and institutionalization goals during this period.

Key Findings

Using both quantitative and qualitative data, the evaluation team concluded the following about the scale, institutionalization, and sustainability of the community supply chain improvement package:

- The community RSPs as designed are simple, easy to use and knowledge levels on their use remain high among health workers regardless of when trained or training approach used.
- Health workers at all levels recognize the benefits of RSPs; there was general consensus that RSPs have streamlined and increased efficiency in the resupply process, improved stock management, collaboration, transparency and accountability.

- Training on RSPs through the integrated training is sufficient to transfer knowledge on requisition and resupply to health center (HC) staff and CCs, as evidenced by higher competency levels at endline than midline.

However, in general, the quantitative survey and case study found evidence that correct and consistent use of RPSs is limited. Despite good understanding of resupply practices, there is a lack of consistency in correct use of RSPs found among CCs and HC staff in original pilot and new scale up districts. The risk of this was understood from the start, which is why the scale up intervention also included a problem-solving, QIT that was intended to reinforce the correct and consistent use of RSPs by creating links between the CC, HC, and district as well as address any CCM product shortages and stock-outs. Case study findings confirm that reinforcement and support from QITs are needed to ensure consistent and correct use of the RSPs, as in their absence (compared to the intervention period) there were declines in supply chain performance. The endline survey found evidence of slow initiation and uptake of QIT meetings, and this slow uptake has hampered reinforcement. Further, the endline showed low levels of district engagement in QITs, meaning there were limited opportunities for districts to identify this and other potential bottlenecks that affect product availability.

In all districts we saw that there was inconsistent implementation of the QIT process (meeting frequency, regularity of content, lack of uniformity of tools) and less data available from supervision and used in meetings, primarily due to CC workload. However, QIT meetings are widely perceived to be beneficial in problem solving, finding local solutions and improving trust and collaboration. There were a few variations between the original districts and scale districts:

- In the original districts meetings happen less frequently, although when they happen, participation is high among HCs and CHWs (not district coaches), the process is well understood but data availability and use has declined. The integrated training and letter from MOH were effective at restarting QITs in some districts/HCs.
- In the scale districts there is a high level of awareness of and interest in QITs, but very limited evidence of QIT addendum training reaching HCs to “kick off” QITs and explain the meeting process and reinforce use of data and tools.

At endline there was a decline in product availability for all six CCM products managed at the CHW level. Further, CHW stockouts are prolonged, primarily reflective of product availability related challenges at HCs rather than issues between CHW and HC. In addition to hampering the provision of services to children under five in the community, challenges with product availability also affect the use of RSPs – when stock levels were consistently insufficient to fill orders, there was a tendency to stop using RSPs, which further undermines the system and availability of data to make informed resupply decisions at higher levels.

Despite these initial challenges in the scale up phase, the overall recognition of the benefits of the RSPs and QITs was widespread. This enthusiasm, combined with the positive results seen during the intervention period when both were implemented and monitored consistently and the MOH’s commitment to this community supply chain package, is encouraging. In the short period between midline and endline, there have been some notable accomplishments in scaling up the community supply chain practices. In particular, CHD has successfully advocated with partners to support scale up of this package to 14 districts, with plans for the remaining 16 in progress.

Recommendations

Based on the potential impact of the interventions as seen at midline and the challenges seen during the endline evaluation, there are several general areas of recommendations for the MOH to ensure the CCM program continues along the pathway to a stronger community supply chain for CHWs:

- Continue rapid implementation of RSPs and QITs to the remaining districts in Rwanda and consider combining the QIT addendum training with the integrated training for CHWs and then provide systematic follow up after training.
- Operationalize performance based financing indicators to support RSPs and QITs, including CHW stock card accuracy indicator, QIT meeting indicator, and CC supervision indicator.
- Institutionalize RSPs and QITs at all levels of the system to ensure QIT meetings are happening regularly by including QITs in annual district action plans and establishing clear central level leadership and support; plan and budget for regular printing and replenishment of necessary tools.
- Ensure RSP data is integrated into the electronic logistical management information system (eLMIS) and data is readily available for central, district, and HC follow up on reports of stock imbalances.
- Review and revise RSPs regularly to meet the needs of the community supply chain, including product list, resupply quantities, and integration with possible mHealth reporting solutions.

Findings from the evaluation show that lack of consistent availability of community health products along the supply chain can undermine the benefits provided by the RSPs and demotivate the CHWs. Improvements in data visibility for informed decision making through eLMIS, strengthened linkages for communication through QITs, and resupply that is based on demand using the RSPs at each level would help to alleviate and reduce the stock imbalances and disconnects in the resupply system.

Conclusion

Over the years that the SC4CCM project has been working in Rwanda, the CCM program has been recognized for accomplishing reductions in Rwanda's under-five mortality and morbidity rates. The continued success of this program will require that a strong and robust supply chain is in place to ensure that the lifesaving medicines reach the community. The combined RSP and QIT approach has proven to be successful in creating a supply chain where procedures have led to clarity and standardization in the community level resupply process, data is more visible and used and where staff are motivated to take responsibility and work together to improve the performance of the supply chain. However ensuring the whole country experiences the benefits will mean rapidly completing scale up of RSPs and QITs. Furthermore, ensuring that RSPs continue to be followed correctly and QITs are sustained will require commitment and ongoing support from stakeholders at all level: implementing partners, MOH policy and the operational levels. Teams must be encouraged to meet, monitor and take actions to improve their performance, and this will rely on strong and consistent district engagement as well as follow up from CHD and LMO. RSPs and QITs will require ongoing support technically and financially so that they adapt to changes in the environment such as the eLMIS while continuing to support and meet the needs of the supply chain. Most importantly, efforts will be required to ensure that products are available at all levels of the system to meet the needs of the community and that products reach the lower level so that CHWs can continue to do their important work of treating and managing sick children in the community.

Background to the SC4CCM Endline Evaluation in Rwanda

In 2010, the Supply Chains for Community Case Management (SC4CCM) project, with funding from the Bill & Melinda Gates Foundation, set out to increase availability of key medicines and commodities for treatment and management of sick children at the community level in three sub-Saharan Africa countries, Malawi, Ethiopia and Rwanda. A baseline assessment conducted in the first year of the project (2010) identified key gaps in the community health supply chain (SC) and the project used these findings to design a Theory of Change (see Appendix 1) and country specific intervention packages to be tested in each country.

In Rwanda, the baseline assessment identified that principal gaps were lack of standard procedures for calculating resupply quantities for community health workers (CHWs) and a lack of data visibility of CHW logistics data at all levels of the system. The baseline also found a number of challenges CHWs face in performing SC tasks effectively and consistently, such as lack of storage and remuneration for time and transport.

Based on these results, in 2011 the project assisted the Ministry of Health (MOH) in developing a new set of resupply procedures for the community level, to improve the SC and resupply process for providing health products to CHWs, using cell coordinators (CCs) as the primary actor in resupplying CHWs. Building on those resupply procedures, the project tested two interventions in 2012-2013 designed to further strengthen performance of community SC, and significantly improve product availability (PA) at the community level. One of the interventions tested used a proven quality improvement method (quality collaboratives, or QCs) to strengthen CHW resupply procedures, and the other used SC performance incentives to motivate CHWs to perform SC tasks (incentives for community supply chain improvement, or IcSCI) consistently and effectively. The testing period for these interventions was 12 months, from April 2012 to March 2013, after which the project conducted a midline evaluation to measure the extent to which the two SC interventions were carried out as planned, and what affect each one had in improving PA at the community level. A full report on these interventions and test periods can be found in the SC4CCM Rwanda Midline Report[1].

The midline evaluation, conducted in April 2013, included the same ten districts as the baseline and compared results from two intervention groups and a non-intervention group to determine the best strategy to recommend for improving PA nationwide. This research design compared two intervention groups, in three districts each, for a period of time adequate to generate significant improvement in PA. SC4CCM hypothesized that both interventions had an equal chance at success, but there was strong evidence that both of the interventions would require up to 12 months to achieve maturity/maximum results, at which point we would be able to evaluate their longer term potential.

Analysis of the midline results showed that both interventions achieved improved PA with CHWs, with some differences observed between the quality improvement method and the incentives group, the key findings from the midline evaluation were:

1. The QC intervention was well implemented and the quality improvement teams (QITs) at health centers (HCs) met regularly. The QC process was considered valuable, especially as a means for improved coordination and problem solving across levels of the health system.

[1] SC4CCM Project Team. 2013. *Rwanda Community Health Supply Chain Midline Evaluation Report.* Arlington, Va.: SC4CCM. http://sc4ccm.jsi.com/files/2014/02/Rwanda-Midline-Report-FINAL.pdf

2. The IcSCI intervention showed changes in performance in SC tasks, but change was not consistent across all indicators or districts tested. Only three indicators were seen to have significant change in all three districts.
3. PA, as measured by CHWs with all five community case management (CCM) products in stock on day of visit, was significantly higher in the QC districts (63%) than the comparison districts (38%; p<.001), and non-significantly greater availability in the IcSCI group (45%) than non-intervention districts (38%). A significant decline was detected since baseline for this measure in the non-intervention districts (from 58% to 38%; p<.01).
    - The difference-in-differences (DiD) analysis confirmed that the significant improvement in the QC districts for this main project objective was plausibly attributable to the intervention (p<0.001).

The midline data was presented to MOH national and district level staff at a National Data Validation Workshop held in Kigali in July 2013. The MOH used the findings to develop an evidence-based supply chain improvement package to scale up to benefit the national health system, especially CHWs and the children living in Rwanda's communities.

Scale Up Package

Since the time of midline and approval, SC4CCM has been supporting the MOH in adapting components of the interventions to create community SC practices and then scaling the intervention package to all districts in Rwanda. The community SC practices include the following:

RSPs

The Standard Resupply Procedures (RSPs) establish a solid foundation of procedures, tools and skills for the community level SC. The goal of the design was to keep the system as simple as possible while ensuring that CHWs always have enough products to serve their clients. This system makes CCs responsible for collecting and reporting logistics data and ensuring supplies reach all CHWs in their cells. Designating reporting and product distribution responsibilities to the CC was a deliberate design decision aimed at promoting quality of logistics reporting and ensuring the training rollout is affordable for the public health system. To meet these objectives, requirements were condensed so that **only three simple tools are needed for the CHW resupply process: a stock card, the resupply worksheet (RSW) and the magic calculator** (Figure 1).

Figure 1: Magic Calculator

Balance →	0	1	2	3	4	5	6	7
↓ Cons.								
0	4	3	2	1	0			
1	4	3	2	1	0			
2	4	3	2	1	0			
3	6	5	4	3	2	1	0	
4	8	7	6	5	4	3	2	1
5	10	9	8	7	6	5	4	3
6	12	11	10	9	8	7	6	5
7	14	13	12	11	10	9	8	7
8	16	15	14	13	12	11	10	9
9	18	17	16	15	14	13	12	11
10	20	19	18	17	16	15	14	13

In the scale up phase, the RSPs were added to an integrated training for CCs including other areas of CCM training. The integrated training has been supported by different implementation partners in different districts. The training is cascaded from a team of Master Trainers to district and health center staff and then to CCs to implement with their cells.

Quality Improvement Teams

The purpose of a Quality Improvement Collaborative is to close the gap between desired and actual performance by developing, testing and scaling up successful changes quickly across many teams. It is

typically a short term initiative (12 months) that identifies and tests interventions to address gaps in system performance to generate best practices. A fundamental component of the QC is the participation of the health workers who are closest to the functions and tasks that will undergo change. QITs all focus on a single topic area and have shared objectives and indicators.

In Rwanda for the community SC practices, QITs are formed and composed of CCs (from all the cells associated with the HC) and HC staff (CHW Supervisors at the HC level, HC Pharmacy Managers (HCPM) and Data Managers). QITs are to receive support from district level staff to act as coaches. The teams use data, collected by CCs during supervision visits to CHWs, to identify gaps and document, implement and test changes to the resupply system, then evaluate and make more changes to further improve SC performance. The purpose of the QITs is to reinforce the correct and consistent use of RSPs and improve SC management for the five key CCM products (amoxicillin 125mg, zinc 10mg, ORS, Primo Red, Primo Yellow, and RDTs).

The QITs meet monthly at the HC to compile and analyze data, identify problems and develop or refine solutions that they think will improve use of RSPs. QIT members have simplified tools to collect and analyze data, identify key challenges, do a root cause analysis, develop a SMART (Specific, Measurable, Attainable, Relevant, Time-Bound) objective each quarter, and create and maintain an action plan. Between meetings the QIT members visit CHWs to implement the interventions agreed to in the QIT meetings through supportive supervision activities.

During the SC4CCM test period, every quarter, all QITs within one district met at the district level and participated in two day Learning Sessions where they reviewed the progress of each team, received expert input on how to address problems and engaged in peer to peer learning. At the end of 12 months, a final learning session was held that brought together representatives from QITs in all three districts to share experiences and refine the current procedures based on the results of the interventions tested by the QITs. During the intervention period, SC4CCM provided CCs with facilitation allowances (6,000 RWF/month, provided quarterly) to promote supervision visits and follow up with CHWs and District Coaches were provided 24,000 RWF/month to attend and support QIT meetings.

In the package that is being scaled up several key changes were made to the design and implementation of the QITs:

1. The SC data needed was added to the integrated supervision checklist for CCs to use when they visit CHWs
2. The QIT tools were added to the integrated training for CCs on CCM
3. A QIT addendum training was developed for District Coaches, who in turn, would be expected to visit individual HCs to hold an initial QIT meeting to cover roles and responsibilities, explain how to hold a meeting, and help establish meeting schedules
4. The Learning Sessions were discontinued due to the significant resources these required to plan and facilitate
5. Allowances for district coaching and CC supervision visits were not continued.

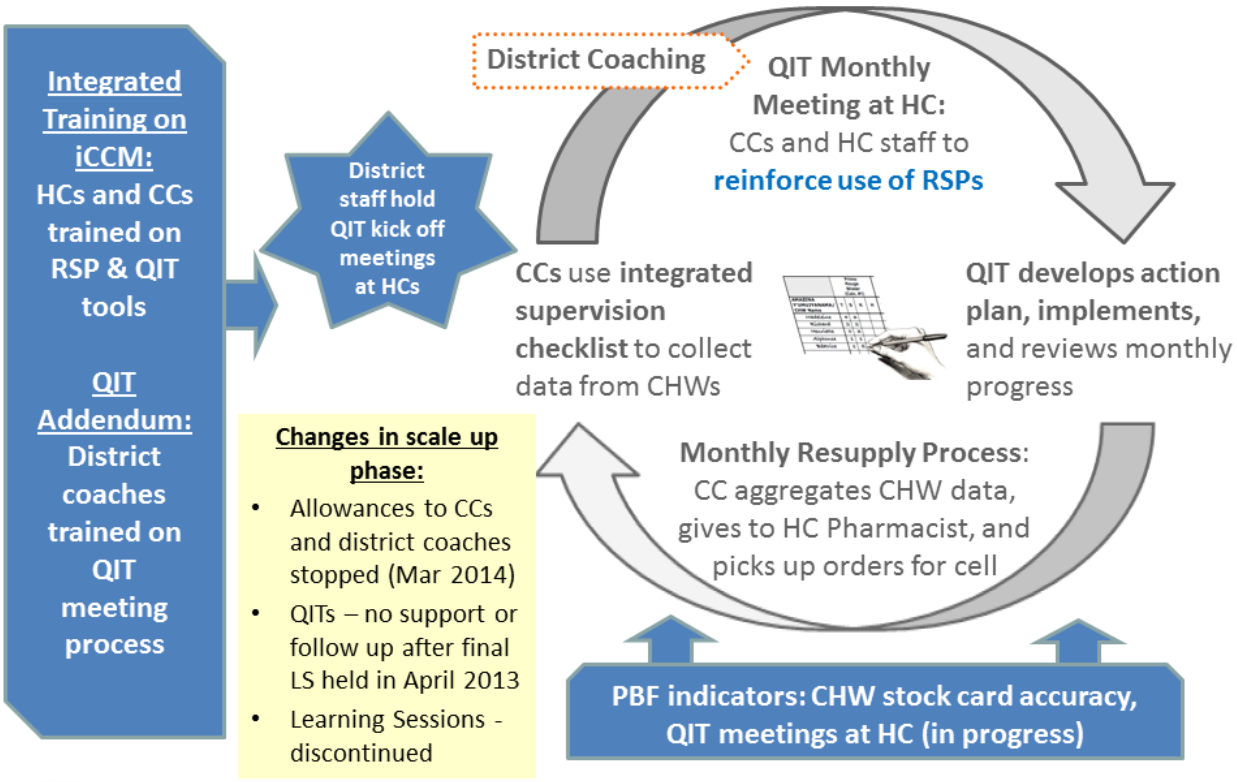
Incentives for Community Supply Chain Improvement (IcSCI)

Based on midline results and the desire to continue to draw attention to the importance of SC tasks for CHWs, the MOH decided to add one indicator – stock card accuracy – to the community performance based financing (cPBF) system. Additionally, in order to support and reinforce QIT meetings, another indicator was proposed for inclusion in the clinical performance based financing (PBF) for HCs – this would measure QIT frequency and provide an incentive to meet on a regular monthly schedule.

Between the time the scale up package was defined in July 2013 and when the endline began in April 2014, the integrated training for CCs had been scaled to ten districts. These same ten districts had also

received the QIT addendum, in addition to two of the original QIT districts that had not yet received the integrated training. Trainings were provided throughout this nine month period so different districts had different lengths of experience with the community SC practices.

Figure 2: Scale Up Package for Strengthening the Community Health Supply Chain



Before the SC4CCM grant closes in late 2014, the project conducted an endline assessment that systematically collected evidence on two concepts central to the project's objectives of finding effective SC solutions for CHWs: scalability and sustainability of the interventions designed and implemented in Rwanda. In addition, the endline evaluation allows SC4CCM to draw implementation lessons from the intervention scale up process and assess the progress made towards scale up and institutionalization goals during this period.

Endline Evaluation Methodology

This endline focused on two central concepts: scalability and sustainability of the interventions designed and implemented in original districts as part of the SC4CCM project. In addition, the endline evaluation allowed SC4CCM to draw implementation lessons from the scale up process and assess the progress made towards scale up and institutionalization goals during this period.

Over-arching Endline Evaluation Questions:

- To what extent (geographic breadth and institutional depth) have the SC4CCM interventions to support commodity availability at the community level been scaled up in Rwanda?
- To what extent have the program effects of SC4CCM observed at midline been maintained at endline?
- To what extent have the interventions been institutionalized at endline?
- What aspects of the SC4CCM design, implementation, and overall project approach contribute to scalability and sustainability of the particular intervention supported in Rwanda?

To explore how the RSP+QIT is contributing to improved SC practices and what changes are attributed to the RSP+QIT, as identified by CCs, HC staff, and district staff, the SC4CCM endline evaluation used both the Logistics Indicators Assessment Tool (LIAT) survey and case study data collection methods. Appendix 2 depicts the conceptual framework used to structure the endline evaluation, which aimed to answer questions related to intervention operationalization, scale up, institutionalization, and potential sustainability. Each element in the box and arrow diagram was used to determine the types of data and data collection techniques that would be needed, and which would be best collected through the LIAT survey and which through the case study.

SC4CCM designed interventions in Rwanda to support implementation and adherence to the RSPs, including management and monitoring mechanisms that would link CCs with HCs and the district (QITs), and performance incentives for CHWs (cPBF), with the aim of increasing and stabilizing CCM PA at the CHW level. The intervention assessed at endline was different than that assessed at midline, in that findings from the midline informed adaptations to the interventions that were taken to scale (i.e., QITs rather than QCs; one SC performance indicator rather than nine indicators; different modes of training delivery and support).

In the original districts, the endline evaluation aimed to understand the potential sustainability of intervention operationalization (institutionalization), as well as effects of the intervention. However, the QCs were not sustained exactly as designed in the period between midline to endline, so it was difficult to assess this aspect of the intervention. In addition, scale up of the revised intervention had been initiated in the scale up districts, providing the opportunity to assess scalability. In both types of districts, the QIT had been started or re-started very recently, providing relatively few "data points" that could be used to understand the QIT process. We used the following definitions for scalability and institutionalization:

Scalability *is the ability to replicate a proven supply chain intervention and extend that intervention broadly and successfully, through thoughtful implementation design and advocacy, to be adapted and adopted to support the national CCM program, while achieving the desired benefits of improved product availability.*

Institutionalization *occurs when the interventions that have been developed and proven successful are adapted for and integrated into the structure and systems of the organization responsible for providing*

and supporting CCM services, in most cases the Ministry of Health, and that the intervention becomes a standard business practice of the organization.

The process of scaling up can produce factors that contribute to institutionalization, and vice versa. The main distinguishing feature between scalability and institutionalization is the approach taken to ensure a shift in responsibility for and ownership of the intervention by a dedicated SC management organizational unit within MOH. Institutionalization is also considered a key prerequisite for ensuring the gains in SC performance associated with the interventions can be sustained.

SC4CCM considers that to be sustainable, the intervention which becomes a standard practice should be part of an integrated SC management system, although we recognize that sustainability is more than integration. The specific attributes which characterize an integrated SC have been articulated for public health[2], and adapted here for SC4CCM endline evaluation purposes.

> *In an integrated supply chain "people, functions, levels, and entities of the supply chain are linked and managed under an interconnected supply chain organization. Supply chain managers are empowered and understand how to collect and use information to map the system and streamline processes, use resources more effectively, monitor and improve performance, and align various supply chain processes to achieve common goals.*

The long-term goal is the development and implementation of an *integrated supply chain management system*. SC4CCM did not directly try to achieve this, but strove to contribute by including considerations for an integrated SC both in the design and implementation process for the interventions, and used two cross cutting principles to guide its approach. The first principle designed the intervention with an eye to maximizing its affordability and feasibility of implementation, so that it could be scaled up relatively easily to other districts if the practice proved to be effective. The second principle implements the intervention in a way to facilitate its absorption by the existing SC management system, by streamlining procedures where possible, aligning with higher levels, and creating strong management practices that allowed for flexibility and agility.

LIAT Methodology

The endline assessment was conducted by JSI and a subcontractor with technical expertise in case study evaluation methods (George Washington University), in collaboration with the MOH/Community Health Desk (CHD) and a local evaluation partner to carry out the quantitative data collection (CRT Limited). This endline data collection started in April 2014 and concluded in June 2014. Endline results are intended to be used to assist the Rwanda MOH, other districts in Rwanda, and potentially other countries in efforts to adopt, scale up, and sustain evidence-based strategies for improving the CCM supply chain.

The LIAT was the quantitative tool used for the endline. The LIAT is a well-known tool for assessing stock status and other quantifiable aspects of a SC, which was modified to focus on community level SC issues and for the Rwandan context. Data collection tools for the endline assessment included questions tailored to specific SC interventions that were tested, but were based largely on the tools used for the midline LIAT survey. LIAT data was collected through structured interviews with CCs and health center staff, as well as physical inventory of key child health products kept at the CHW level, and assessment of certain aspects of record keeping and reporting. Lower level staff interviews were translated into Kinyarwanda.

JSI selected a local evaluation partner, CRT Limited, to hire enumerators and to collect LIAT data. Both the training of enumerators and the data collection itself were carried out in English and Kinyarwanda as

[2] John Snow, Inc. Getting Products to People: The JSI Framework for Integrated Supply Chain Management in Public Health, 2012.

needed. Four data collection forms in total were used. Four teams composed of two enumerators each, plus one supervisor, traveled to the field sites for data collection. Data were collected by enumerators using cell phones loaded with preset forms developed using Magpi software. Data on phones was stored in a password-protected web-based database that only researchers could access. Data collection forms and content were all Java-based and were not sent over network phone lines in SMS format, so no mobile network and telecommunication provider company will be storing data or have access to the data at any point in time.

Quantitative Sample Approach and Sample Size

For the LIAT portion of the endline assessment, a representative sample of HCs was selected randomly from the three QC districts to match the number visited at baseline and midline. As for the previous surveys, probability proportional to size (PPS) sampling method was used to make the selection. Three CHWs were selected randomly from the roster at each selected HC, as well as two CCs. (Table 1)

Table 1: LIAT Sample, Rwanda Endline Evaluation

Level	Achieved Sample	Selection Strategy
District	3	Original midline districts in the QC group
Health Center	30	PPS; HCPM and CHW Supervisor at each selected HC
CC	64	Two randomly selected per HC
CHWs	96	Three randomly selected per HC

At HC and CC levels, structured interviews were conducted and an assessment was carried out to measure availability of tools, status of key activities, and information quality.

Case Study Methodology

The aim for the case study component of the SC4CCM endline evaluation was to collect evidence on the potential sustainability of the interventions in the original districts and to draw implementation lessons from original and scale up districts to assess the scalability of the interventions in order to support future scale up. Case study data also were used to assess the progress made towards the institutionalization goals of the project. Because institutionalization, scalability, and sustainability are not concepts that can be easily measured with quantitative surveys, and indicators are difficult to use for fully understanding implementation processes, a case study methodology was used to assess these concepts and processes, and the nature of the relationships among these concepts and processes.

Specific questions addressed by the case study:

- Have the effects observed at midline been sustained at endline in original districts? Why or why not?
- To what extent (geographically and operationally) have the innovations been scaled up? Integrated training, supervision checklist, RSP, QIT, and PBF? What has contributed to scale up of the different components?
- What factors affect successful operationalization of the RSP?
- What factors affect the successful operationalization of the QIT?
- What role does the QIT play in the successful operationalization of the RSP?

- What was the decision-making process to redesign the innovation? What considerations were instrumental in that process?
- To what extent have the innovations been incorporated into health workers' (at all levels in the system) routine work (standard business practice)?
- To what extent have responsibilities for supporting community-level SC management been incorporated at other levels (district, central)?

The Conceptual Program Theory also shows, in large arrows, the primary contextual and mediating factors that are hypothesized (Appendix 2) to have affected both the effectiveness and implementation of the SC4CCM innovations. The case study specifically explored ***how*** RSP+QIT is being used, and **how** the RSP+QIT may or may not be facilitating CHWs and CCs to do their work in improved SC practices, focusing on the influence of the contextual and mediating factors, the relationship between these factors and use of RSP+QIT.

Case selection

Contextual and mediating factors were used to help identify selection criteria for the case study units. This case selection approach helped control for contextual and mediating factors when analyzing the qualitative data, to maximize the relevance and transferability of the findings beyond the selected cases (Appendix 3).

First, two of the original districts were purposively selected – the highest and lowest performers in terms of change in PA from baseline to midline. The purpose of this was to give information on the "extremes" of the range of PA effects of the interventions. In each district, two HCs that were using RSP and had completed QIT addendum training were purposively selected – one high performer with regard to PA, and one low performer (again using midline results as the determinant). For each selected HC, the CHW Supervisor identified four CCs for interview: two who were considered easy to reach, and two who were considered hard to reach from the HC location to better understand any differences related to travel distance.

Next, two districts where RSP scale up had started were purposively selected, based on: QIT addendum training conducted; the partner support model; and having a HC profile similar to the original districts. Then, in the absence of PA data from HCs in these scale up districts, two HCs were randomly selected per district, and verified for using RSP and completing the QIT training. As in the original districts, for each HC, we asked the CHW Supervisor to identify four CCs – two who were considered easy to reach, and two who were considered hard to reach from the HC location.

In one original district, a third HC was added during field work when the case study team was able to identify that it was an "outlier" in terms of continuing QIT meetings. The team determined that it was worth trying to learn what made that HC a "positive deviant", in order to find out if there were relevant lessons for scale up and sustainability of the QITs.

Case study data collection

The case study used the endline evaluation Conceptual Program Theory to structure data collection, focusing on gathering understanding around each of the elements in the framework, and used a variety of data collection techniques and inquiry strategies for triangulation (Table 2).

Table 2: Data Collection Activities, SC4CCM Endline Case Study

Levels	In-depth Interviews	Other Data Collection Activities	Photos
Central	4	-	-
District	13	1	-
Health center	19	15	18
CCs	17 (pairs)	36	-
Total	**53**	**52**	**18**

Two key staff were interviewed at each HC – CHW Supervisor and HCPM. CCs were interviewed together, as a pair from either far or near from the HC. At district level, the District CHW Supervisor (DCHWS) and District Pharmacist (DP) were interviewed, and when available, the Data Manager who had been trained as a QIT Coach. Depending on the role each level played in RSP and QIT, other data collection techniques were used in addition to in-depth interviewing (see Appendix 4 for a complete list of data collection exercises used at each level).

Analysis of Endline Evaluation Data

LIAT data were analyzed using Stata SE 13 by SC4CCM headquarter staff. Chi square tests were used to test significance of results between midline and endline. Findings from the LIAT survey also informed further in-depth exploration of the case study data.

Transcripts from the case study interviews and observations were first analyzed during a five day in-country analysis workshop by the entire case study data collection team, local SC4CCM staff, as well as SC4CCM headquarter staff and the principle investigator from George Washington University. In this workshop, data were first examined district by district, starting with transcripts for the CC pairs and working up to the district interview transcripts. Themes identified through the district analyses were then analyzed in greater depth: RSP processes and benefits; QIT processes and benefits; and perceived benefits, problems, and changes related to interventions and CHW PA.

Next, important contextual and mediating factors were identified, level by level, and incorporated into the analysis: cPBF; cooperative income-generating activities (IGA); cost recovery for different drugs and products; HC and district staff turnover and availability; changes at the MOH to address CCM supply chain. Central level interviews were incorporated at this stage. Then the team used the analysis findings to revise the program theory to reflect the findings from the case study (Appendix 5).

Second stage analysis after the in-country workshop compared findings from original and scale up districts; identifying evidence of institutionalization; and formulating lessons from scale up before developing the key findings statements presented in this report. Specific themes and topics that were identified during the in-country analysis workshop were re-analyzed by different team members, and findings reviewed by the entire team.

Case study and quantitative results were then triangulated to identify concordance, discordance, and explanatory relationships. When concordance among findings between the two sources of data was found, the two sources of data were used to reinforce findings, and to provide more in-depth information on the processes and experiences of users of RSP and participants in QIT. Very few instances of discordance were identified. Both sources of data are presented under each major finding.

Relevance of the Endline Evaluation Findings

Based on the sampling strategy, LIAT results are generalizable to the three original districts. The case study purposively selected districts and HCs as case units, focused on ensuring representation from the low and high ends of RSP performance. The intent was to learn from the extreme ends of the performance spectrum in order to understand how and why RSP, QIT and PA were working in the case units. The results from the case study are relevant outside the cases studies, transferable to other districts, HCs and CCs operating in similar contextual situations as the selected case units. Because PA was used as the case selection criteria for districts and HCs, and accessibility for selecting CCs, these criteria can be used to determine how similar other districts and HCs may be to those in the case study. In the absence of district and HC PA data, the district level context can be used instead to determine comparability of HC contextual situation and transferability of case study results. Overall, our assessment is that the contextual situations of the four districts, eight HCs and 16 CCs in our case study sample are not atypical, and the results should be transferable to the majority of districts and HCs in Rwanda.

This report presents key findings based on both the LIAT and case study data, following the outline provided by the Revised Program Theory in Appendix 5. The discussion section pulls the findings together to identify considerations for scale up and institutionalization and sustainability.

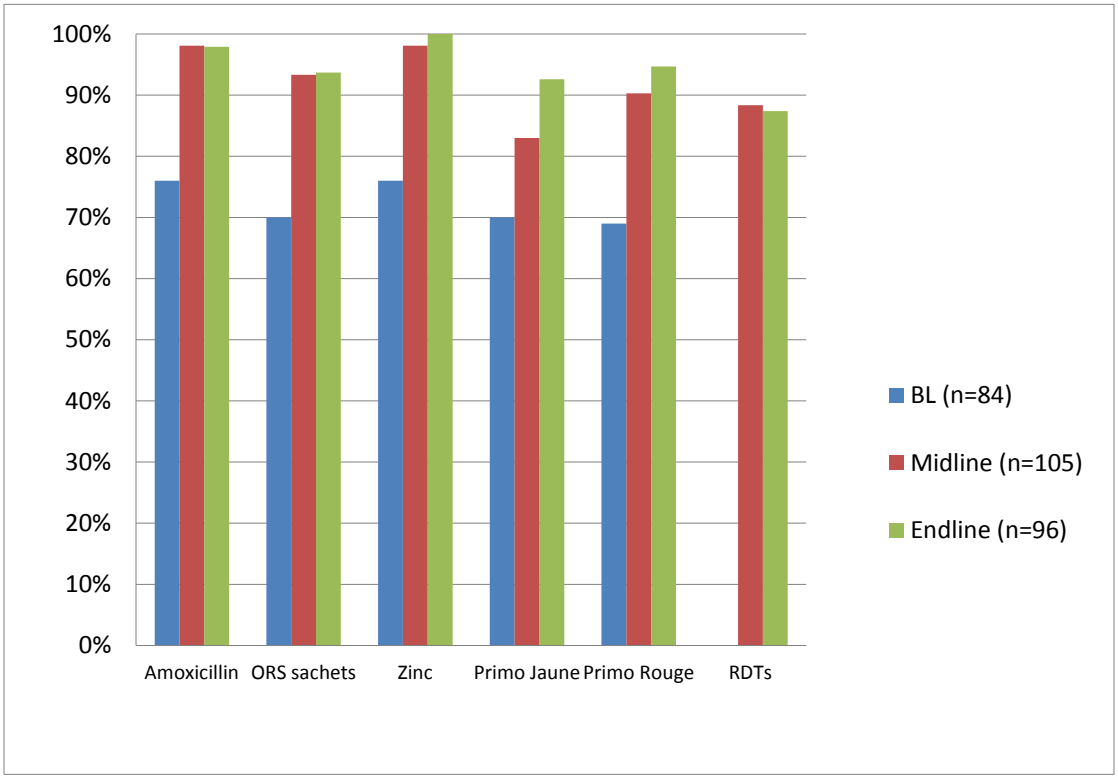
Key Findings: RSPs

Analysis began by looking at the use of RSPs at the CHW, CC, and HC levels. To interpret our combined findings on RSP properly, it is important to remember that RSP training and duration of use varied among our endline evaluation sample units[3]. Of the four case study districts, two were original districts and had been trained in RSP in 2011; and one of these also received integrated training in early 2014, just prior to endline data collection. The LIAT survey included the third original district that also had received RSP training in 2011. All of the three original districts included in the LIAT survey have been using RSP since the first training. The case study also included two scale up districts that received their RSP training in November 2013 through the integrated training, and had been using RSP since that time (approximately six months).

RSP Tools, Training & Knowledge

In all districts that were part of the case study or LIAT survey endline, we found that the key tools for RSPs – stock cards, RSWs, and the magic calculator - were available and in use. At endline, CHW stock card availability remained high compared to midline indicating that the foundational tool for the resupply system, and key source of consumption and stock data, was in place.

Figure 3: Percent of CHWs with Stock Cards on Day of Visit



At the CC and HC level tool availability was similar to or higher than at midline with the exception of the job aid at the HCs, which is less critical because the job aid is intended primarily for the CCs.

[3] There was also variation in the types and duration of support provided through quality improvement activities, designed to support the use of RSPs; this is discussed in the next section.

Figure 4: Availability of RSP Tools at HC (with HCPM)

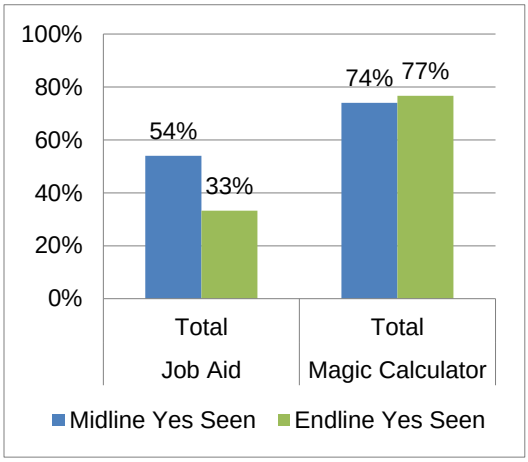
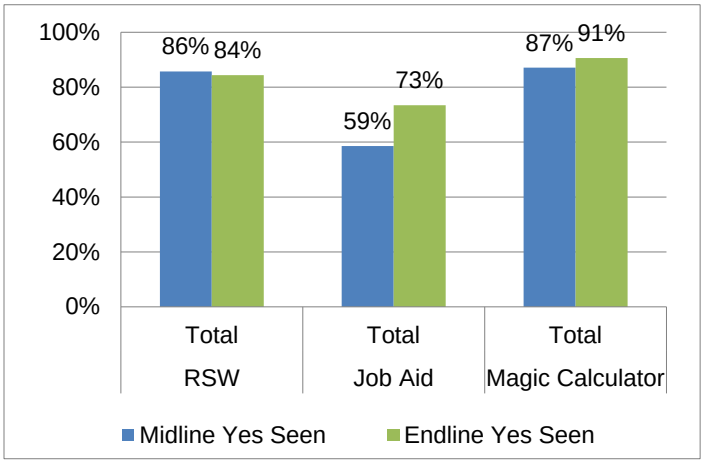


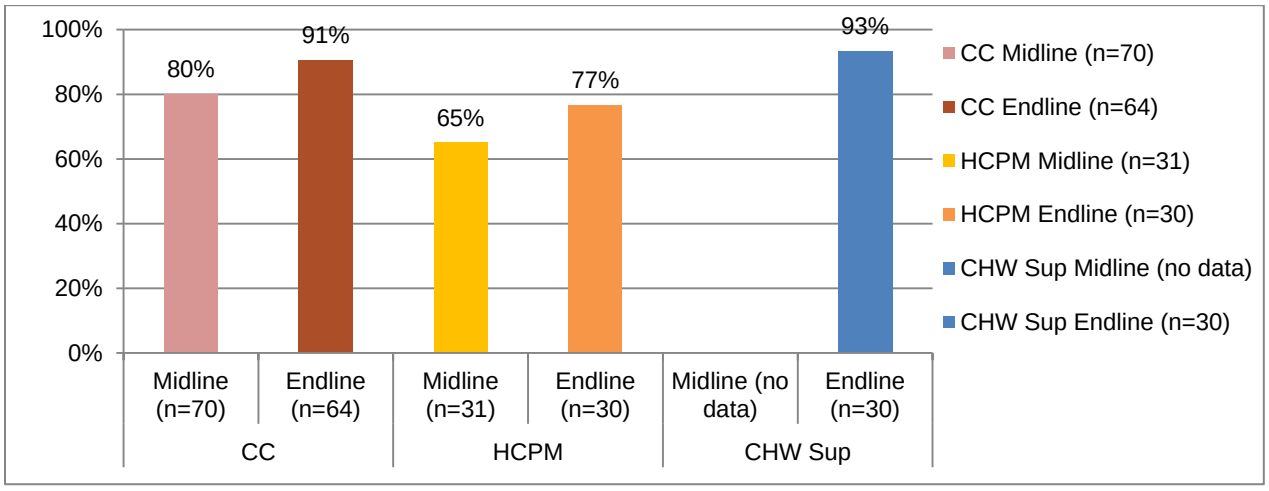
Figure 5: Availability of RSP Tools at CC Level



CCs and HC staff had sufficient and accurate knowledge on how to use the RSPs, regardless of when or how they received training.

In both in-depth interviews and observations, HC staff members were able to correctly describe the use and function of the RSW to the case study team. Case study observations also showed that all 16 pairs of CCs were able to correctly demonstrate the process used for completing the RSW. A comparably high level of demonstrated RSP knowledge was also found in the LIAT survey data (Figure 6); in fact, the percentage of CCs and HC staff with sufficient and accurate knowledge of the RSW and magic calculator increased from midline.

Figure 6: Percent of CCs and HC Staff That Can Demonstrate Correct Use of RSW and Magic Calculator



This finding was in spite of the fact that the three districts in the LIAT survey and the four districts in the case study received training through different modalities and at different times. The original districts were trained in RSP (only) three years before; scale up districts and one original district (that had received RSP training earlier) received integrated training that included RSP among other things only a few months prior to endline data collection. Regardless, knowledge of how to use RSP was found to be accurate and sufficient. We interpret this to mean that **the new way of delivering RSP knowledge for scale up, through the integrated training, is just as adequate for conveying RSP knowledge and skills as the**

previous dedicated training provided by SC4CCM in conjunction with the MOH. In addition, it seems that the knowledge of how to use the RSP endures fairly well over time.

It was also true that knowledge was high despite staff turnover and lapses in formal training on RSPs. The LIAT survey results show that turnover is high among staff at the HC level, especially for the HCPM; 30% of the 30 HCPMs had been in their current position for one year or less (Figure 7). This was reflected in the proportion of HCPMs who had been trained in RSP; as only one of the three districts included in the LIAT survey had received the integrated training which took place within the past year. HCPMs had the lowest proportion of staff trained on RSP at endline (73%) of the three cadres of staff included in the LIAT measure (Figure 8).

Figure 7: Years in Current Position

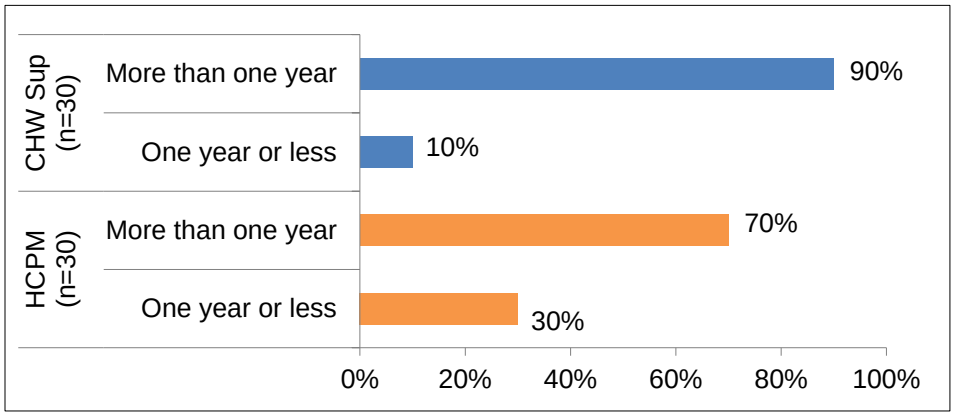
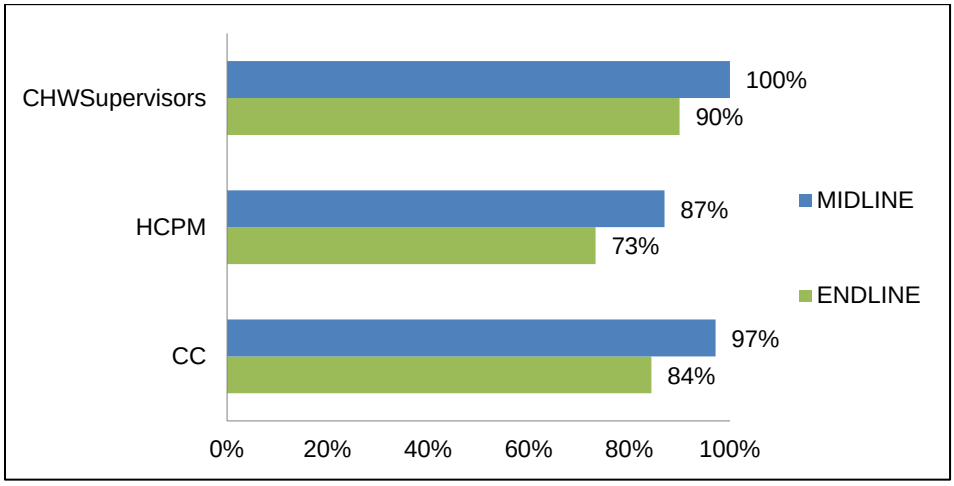


Figure 8: Training in Resupply Procedures



This high level of turnover emphasizes the critical role of planning for the transfer of knowledge of RSP protocols. As staff members who have participated in the integrated training move to different positions, it is essential that HCs have strategies in place to train new staff members on RSP tools to ensure the level of knowledge remains consistent after the initial training has been introduced. An important positive finding from the endline case study is that many HC staff stated that they had successfully trained new or temporary staff, and had found it easy because of the simple design of the RSP tools.

The case study data provides some additional information to explain this finding. Users of RSP in both original and scale up districts, HC staff and CCs, as well as some district level staff in both original and

scale up districts, appreciated the simplicity and clarity of the RSP tools and processes. They found that it was easy to use the magic calculator and the RSW, and easy to understand the information on the RSW. In both original and scale up districts, the ease of using the RSPs was identified as mitigating the negative impact of staff absences and turnover; respondents stated that even untrained staff members are able to comprehend the information, and trained staff found it easy to quickly train new staff. These benefits could only result from simple, well-designed tools and processes, which result in ease of training in using them.

Perceived Benefit	Key Quotes
RSPs provide a simple system that helps organize the resupply process	*"Even in the management of information to make requisitions, we could not easily find that information. With the new RSP, even from the village level up to the health center 'if you need information it's very easy', there are worksheets, and the documentation is well defined [bien tracee] and that new process in general has helped us to avoid stockouts…Another advantage is that if the pharmacist isn't here, and I am also not here, in my absence the other staff are able to distribute medicine 'because the requisition is so clear.' Before if I wasn't at the health center it was a problem because no one else knew how to requisition medicines, it helps us report monthly as well, from the RSWs, and not only to report well but to requisition well from the district."* HCPM, original district
	"*Before, supply chain was inexistent at the community level. Things were done in a messy way. After the training, CHWs know what they must do in terms of medication resupply and how to fill stock cards properly. The CCs make requisition for the CHWs. This helps the HCs know about the problems related to supply of medications in the community and also helps the HCs in finding solutions for these problems. To me, the system is very good and useful. It is simple to implement with the full participation of the CHWs, not just for medication but for other problems as well. It is a good tool that helps us.*" DCHWS, scale up district

Benefits of RSP

CCs, HC and district staff in both original and scale up districts identified a range of similar benefits that resulted from using the RSP, regardless of the type of training they received, the duration of use, or the management support for using the RSPs (Table 3).

Table 3: Benefits of RSP, by Type of Respondent

	District A	District B	District C	District D
Provided organization and structure, clear on responsibilities	CC, D	CC, HC	CC, HC, D	CC, HC
Ease of information, provided transparency	CC, HC	CC, D	CC, HC, D	CC, HC, D
Improved collaboration with HC staff	CC	HC	CC	CC, HC
Reduced HC staff workload	CC	HC	CC, HC	CC, HC
Improved storage conditions & expired product	CC	CC, HC	D	
Information helped when staff was absent/left position	HC			HC
Reduced CHW workload and travel time		CC	CC, HC	CC
Reduced travel time for patients	HC	CC	CC	
Facilitates borrowing products	CC, D	CC, HC		CC
Facilitates reporting at HC and district level	HC			

CC= Cell coordinator; HC = Health center staff; D = District health staff

The following table provides examples of exactly what respondents said about each of the different types of benefits.

Perceived Benefits	Key Quotes
Provides organization and structure, clarity on roles & responsibilities	*"After the RSP training the disorder in requisition of products ended because now CCs bring requisitions of cells prior to the HC monthly meeting…With RSP training we know which responsible person among HC staff who should give us products instead of asking whatever HC staff we found in the HC compound or the HC Titulaire."* CC, original district
Improved transparency and accountability	*"It helps also to properly follow up with the use of medicines by CHWs…Even CHWs make efforts to correctly use medicine because they know someone is checking. Before, the CHWs used to pick up medications here, then use them in the village as they saw fit."* HCPM, scale up district
Improved access to health care	*"It helps avoid child death and prevents disease at the lower levels from becoming complicated. The children that come to the HC are those that have complicated cases…"* HCPM, original district
Improved collaboration	*"These procedures are good for us, it has helped to harmonize the way of requesting products and it shortened the time we used to spend by waiting to get products…It improved our relationship and collaboration with the HC staff."* CC, scale up district

Efficiency - time saving and reduced work load	*'It* [RSPs] *makes my work easier because it's done once a month. And it's only the CCs who come to requisition products, not all CHWs."* HCPM, original district
Informed decision-making	*"…Before, the CCs were just guessing the quantity of products they needed. But with this system, they use the magic calculator to calculate how much more they need. It's a system that I like."* HC CHW Supervisor, scale up district
Better stock management/ redistribution	*"Another thing is that now the CHWs are informed about redistribution. If there are products with one CHW who doesn't have many clients, and another CHW has ran out, the latter can borrow from the former."* DP, original district
Improved collaboration	*"We have the monthly meetings. The pharmacist consults with CHWs now. Before, the CHWs were making their requisition without talking to the pharmacist or referring to reports."* HC CHW Supervisor, original district

In summary, both the LIAT survey and case study data show that:

- RSPs as designed are simple, easy to use and **knowledge levels on usability** remain **high** among health workers **regardless of when trained or training approach** used.
- RSP tool availability remained high.
- Health workers at all levels recognize the benefits of RSPs; **RSPs have streamlined and increased efficiency in the resupply process**, improved stock management, collaboration, transparency and accountability.
- Training on RSPs through the integrated training is sufficient to transfer knowledge on requisition and resupply to HC staff and CCs; higher competency levels at endline than midline in LIAT data and case study saw similar competency during observations.

Key Findings: Quality Improvement Teams

The scale up intervention also included a problem-solving QIT that was intended to reinforce the correct and consistent use of RSPs by creating links between the CC, HC, and district as well as address any CCM product shortages and stockouts. In the original districts, during the intervention period, SC4CCM provided allowances to CCs to facilitate collection of data through supervision to use for the QIT. These allowances were discontinued and not included in the scale up package, though supervision visits were expected to continue as part of their CC duties, using an integrated supervision checklist that included SC indicators. The findings here draw primarily from the case study data, as well as some indicators from the LIAT survey.

The case study data was collected from two scale up and two original districts. In both scale up districts, a QIT addendum training of trainers was provided by SC4CCM staff to district staff in January 2014, one to two months after integrated training for the scale up districts, and as a refresher for the three intervention districts (only one of which received the integrated training). The evaluation team confirmed that districts had received the addendum training before selecting and visiting these districts. In both original districts, QIT training in another form was conducted in 2012; one original district then received the QIT addendum training (the current form) in early 2014. In the other original district, a third health center was added during data collection when the case study team was able to identify that it was an "outlier" in terms of restarting QIT meetings. We determined that it was worth including that HC in the case study to try to learn what made that HC a "positive deviant", in order to find out if there were relevant lessons for scale up and sustainability of the QITs.

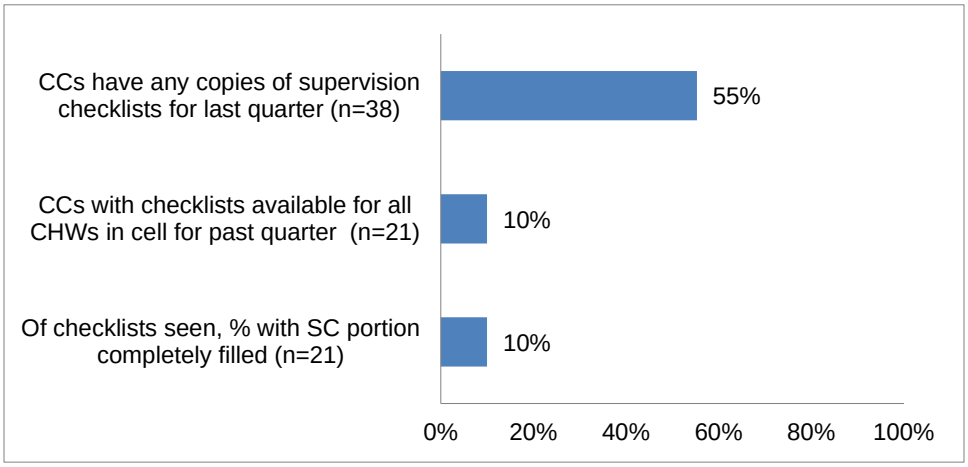
In order to be effective, QITs rely on a **clear, repeatable process to use data** to identify performance targets and develop action plans towards these and then monitor progress. The following three elements need to be in place to support this:

- Data source: CC complete supervision checklist during visits to CHWs (CCs are supposed to visit each CHW at least once per quarter)
- Tools: QITs use tally sheet, decision matrix, why-why analysis, SMART objective, and action plan
- Process: QITs are supposed to meet monthly at HC and use data to track progress against objectives; feedback loop is critical to adapting changes or looking for more effective ones

Integrated Supervision and Data for QITs

Routine CC supervision of CHWs, conducted according to plan and collecting data as indicated through the training and tools, provides the data needed for effective QITs. In the scale up package, this data was collected through the newly introduced integrated supervision checklist that CCs are supposed to use when visiting CHWs in their cells. Of the three original districts included in the LIAT survey, very few (10%) CCs could show integrated supervision checklists for all CHWs in their cell for the past quarter and with the SC portion complete, implying limited data available for use in the QIT process and meetings. Of the three districts, 70% of CCs said they were trained on using integrated supervision checklist, 84% said they were using it; however, only 55% of CCs could show any copies on day of visit (DOV). These low levels of use of the integrated supervision checklist may reflect that only one of the three districts had received the formal integrated training, though all had been given the new checklist. Comments from the case study indicated that HCs were potentially using supplies of old checklist before starting to use the new ones.

Figure 9: Integrated Supervision Checklist Observations



However, this means that QIT meetings may occur, but their quality will be less than optimal, and their full benefits will not be realized without the routine supervision data that CCs collect. The data from the supervision checklists is key for the QIT to understand the range of SC issues and prioritize the most important problems to tackle. We saw that in both original and scale up districts, CCs and HCs identified the use of supervision data as a benefit to QITs. However, in both original and scale up districts, they also identified the high workload of the CC volunteers as being a challenge to conducting supervision according to plan. For some CCs, this stemmed from being in charge of a large cell; for others, they stated that they could do either supervision or attend QIT meetings, not both. HC staff also identified the workload of supervision on the CCs as a barrier to completing supervision in a timely manner and with sufficient quality.

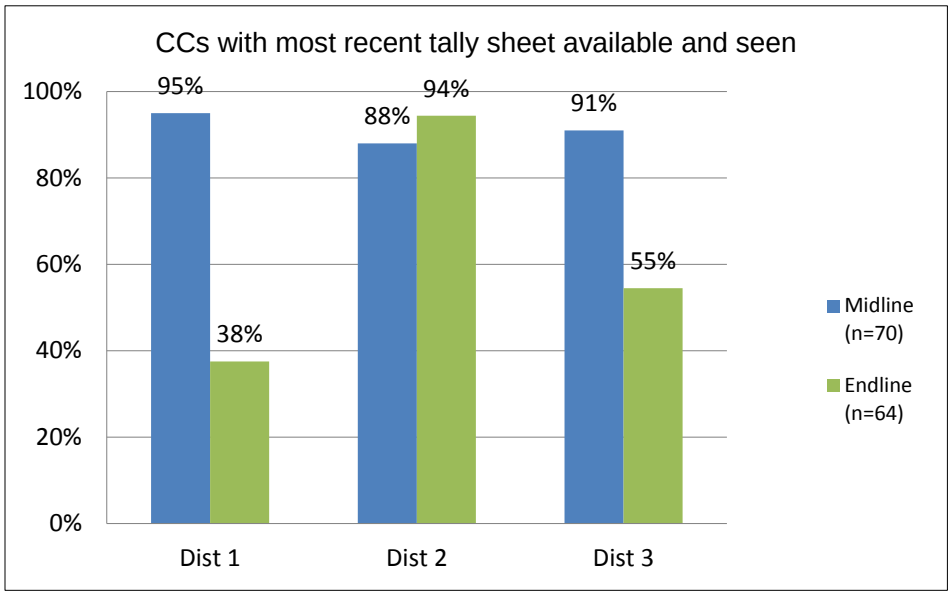
	Key Quotes
Use of supervision data for QITs	*"What about QIT meetings? When do you have them?"* *"It depends on the supervision in the cells. The QIT meetings are planned at the beginning of the quarter. We plan the monthly meetings with the objectives and the number of CHWs that the CCs have to supervise. When the CCs bring data from supervision, we analyze it using the five whys, and we search for the root cause of the problem. After finding the root cause, we look together for answers or for activities that need to be in place so that the objective is attained."* HC CHW Supervisor *"The CCs, after they visit the CHWs, come with data and that data is what we use to get to the 'whys'."* HC Data Manager, interviewed together, original district
Supervision challenges lead to limited data for the QIT process and meetings	*"Are you aware of the tools that CCs use?"* *"Yes, after the integrated training, that was much improved. I try to ask the health center pharmacy manager if he prepares the requisition with CC data. I ask if they compile consumption data compared to what is in stock, and they send it to me and now I can verify. My only recommendation is that I recall the last supervision visits were supported by the malaria control unit, why can't other programs support supervision to make sure products are received? When the health center is stocked out of ORS, they borrow quantities of ORS from*

	community programs and can cause a stockout there. Such supervision visits can mean the supervisor asks where the ORS supply is for the community program, and can ensure products are where they're supposed to be. The supervision that was supported by the malaria control program, that doesn't happen regularly." District Pharmacy Data Manager, scale up district
	"If the CCs have supervision visits to conduct for the CHWs, but sometimes they can't complete them, and so that has an impact on stockouts." HC CHW Supervisor, original district
	"What are challenges do you find with this RSP process?" *"As CCs, the major challenge is that related to long travels we do to visiting CHWs in villages. Villages/Households are very distant, so we have to travel long distance and we don't have any payment, you see that is very difficult."* CC, scale up district
	"You see how very large are the cells we cover and CHWs scattered in villages; this took us long time so that we don't have enough time to do other household activities. If you can advocate this at the upper level (i.e. MOH) and see how to provide transport allowances for supervision, this may facilitate us to cover all CHWs in the given period and have time for our ordinary activities." CC, scale up district
	"Besides the transportation constraints, is there a motivation to continue the meetings about product availability, is it beneficial for you to have those QIT meetings?" *"I could say yes or no to that. Because as a recommendation, the method of supervision visits for CCs, I think that needs to be made easier. They [the CCs] could say, yes, I can do more, but practically the quality of those supervision visits would not be the same. They have one appropriate tool for supervision, and if there is time to go to the cell using the one book they can take. If additional meetings were a requirement, they could do that, but then the quality of that supervision would be a problem."* HC CHW Supervisor, original district

Tools and QIT Participation

While data availability and use appears to have dropped in three original districts surveyed by the LIAT, meeting participation is still high and the QIT process well understood. Of the original districts, the percentage of CCs with tally sheets available declined to 59% at endline (from 91% at midline), indicating less data available and used for QIT meetings. At endline, just over half (52%) of Health Center CHW Supervisors had documentation showing all expected QIT members (excluding coaches) attended the last meeting that was held.

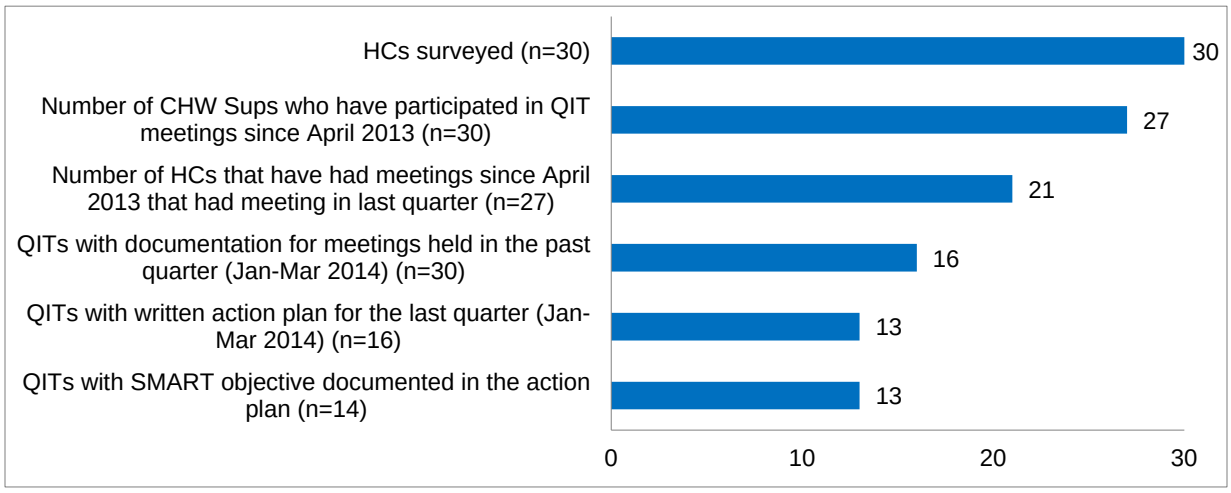
Figure 10: Tally Sheets Observed



QIT Frequency and Action Plans

LIAT survey data from the original districts show that of the 30 HCs surveyed, 27 said they had had at least one meeting in the last year (since the end of the SC4CCM intervention period) though the majority had only had one meeting in that period. Of those, 21 stated that they had held a QIT meeting in the last quarter (January to March 2014), of which 16 had documentation of a meeting held in that period and of those, 13 (81%) could show the expected QIT tools completed for that meeting (action plan with SMART objective) (Figure 11). Similarly, while the majority of CCs (78%) reported attending a QIT in the previous three months, meeting documentation for the QIT was observed for only 53%, introducing doubt about both QIT meeting occurrence and the quality of the content of the QITs reported as attended.

Figure 11: QIT Meetings in Last Quarter



In original districts, there was a lack of clarity among respondents about the frequency of QIT meetings. In these districts that had been trained in 2012 to hold QITs monthly, the three HCs visited had held two meetings on a monthly cycle, but one was unclear whether they should be monthly or quarterly in the

future. Another HC that had not had a QIT meeting since December 2013 understood the recommended frequency to be quarterly (recommendation is monthly). In the scale up districts, the intention was to hold monthly QIT meetings, even if they did not manage to do so; one HC was not clear that monthly meant every month, regardless of whether there were CCM product supply problems to be solved or whether there were stockouts at the HC level that prevented CC resupply. This likely meant that they were not clear on the purpose of the QIT meetings, and the value in a regular cycle of using data during a QIT to identify and prioritize supply problems, making a plan to address them, and revisiting progress and developing new priorities once performance improved.

In the original districts, QITs needed to be "re-started"; they had stopped for a period of about one year as the implementation context changed after midline. Three of the five HCs visited had started having QITs again in March 2014; the other two had last had a QIT in March or December 2013.

In the scale up districts, case study participants were open to the QITs; CCs welcomed the opportunity to discuss problems, get refreshed on their RSP skills, and connect with HC staff. However, only one of the four HCs visited had had more than one QIT meeting at the time of endline data collection. That HC had had two meetings, but had skipped the immediately preceding month because they did not understand that they should hold the meetings regularly, regardless of stockouts or other CCM supply issues; another had planned a meeting but skipped it due to scheduling conflicts.

In both original and scale up districts, QITs needed a "push" to get started with meetings. A letter received in March 2014 by districts and passed on to HCs from the MOH about the need to hold QITs gave some District Coaches and HC staff the impetus needed. In turn, CCs noted that it was up to the HC staff to call these meetings and let them know they must attend. Despite complaints about the additional work burden, CCs in both original and scale up districts attended any recent QITs that were convened out of a sense of duty, as well as for the benefits they identified, because they knew it was their respsonsibility when the HC staff called them.

	Key Quotes
HC staff must call the meeting, CCs will attend because they understand the importance	*"You said QIT meetings were very important, are they stopped and not conducted again?"* *"You see what, it's not up for us to call for that meeting or organize it, I may say that the lack of the continuation of those meetings is that HC staff have not much willingness, even if shortly we raised the issue of the allowance, but if the HC Supervisor has that good will and organize that meeting we can attend it because we know how it's important to have it, for example even if there are some problems I can be able to solve myself, they are some others which I can't solve alone and these needs to be discussed in the QIT meeting and with deep analysis we find solutions."* CC, original district
	"You said above that apart from allowances, the HC didn't also invite you for QIT meetings; if the HC revives these meetings will you attend them?" *"Yes. It is difficult but if the HC invites us, we will attend them as they help to solve problems we faced across our activities."* CC, original district
	"Will you attend the next QIT meeting if no allowances provided?" *"Yes, because it is our duties. For us, it is the crux for all our activities performance, it helps us to address all problems to CCM products management, CHWs know their roles and compared to all other meetings we had, the QIT*

	meeting is very important and very helpful for us." CC, scale up district

QIT Process

In order to achieve the potential benefits, it is critical that QITs function as intended. The content of QIT meetings is intended to include review of the tally sheets based on data collected during CC supervision visits to CHWs and completion of the data summary table to identify the three biggest problems. The team then uses the decision matrix to identify the priority problem(s) to work on during the quarter, uses the why-why analysis to identify the root cause of the problem and develops an action plan with a SMART objective and indicators to address the problem. If this is the second or third month focusing on a problem, progress of the activities and results are documented and discussed.

The QITs were designed to institute a clear and structured process for closing the gap between actual and desired practice of RSPs, and thus are meant to function optimally with the use of the specific tools; without the appropriate set of tools, the content is unlikely to be optimal. **The case study team observed that three of the four HCs in the scale up districts had the necessary QIT tools – tally sheet, decision matrix and action plan; three of the five HCs visited in the original districts were using the old QIT tools (i.e. those used during pilot period).** In one HC without QIT tools in a scale up district, the content of the previous QIT meeting was completely unrelated to CCM or supplies; it seemed to follow more the HC monthly supervision structure. In the HC without tools, staff explained that at the training they attended, the organizers had run out of tools and this HC had not received any.

In another HC with QIT tools in a scale up district, the content followed the recommended format: data from the CC tally sheets was used, as well as the decision matrix; the problem of CC supervision not being conducted as planned was identified, and the action items were related to activities following from that problem (show CHWs how to use stock cards and take expiries to HC; explain the relevance of minimum stock in store) that CCs and HCs could solve.

In the original districts, the HCs using old QIT tools used data to identify problems, but prioritized problems that were often beyond the control of the HC and CCs, usually stockouts at the HC level, despite the fact that QITs are encouraged to focus on problems whose solutions are within their control. This may be a situation where stockouts undermine the ability of any other change or initiative to improve use of RSPs so they chose to focus on it anyway, as it was the primary problem for them.

Table 4: Case Study Findings on QIT Meeting Timing, Content, and Process

	Original intervention					**Scale Up**			
	District A		**District B**			**District C**		**District D**	
	HC 1	**HC 2**	**HC 1**	**HC 2**	**HC3**	**HC 1**	**HC 2**	**HC 1**	**HC 2**
Last Meeting	Meetings held March 7 & April 4, before this, March 2013	March 5 & April 2, before this, March 2013	March 2013	Dec 2013	4 since March 2013	Feb & April 2014	April 2014	March 2014; no April due to a conflict	One meeting - May 2014
Topic Covered	April – stock card accuracy	March – stockout of ORS, April – stockout of RDTs	No meeting so no topic	Dec – Stockout of RDTs,	Reading expiries, correctly filling out stock cards	Stockout of malaria meds.	Rapid SMS VCT/ PMTCT, Family Planning	Missing stock cards; CHWs not having minimum stock	CC supervi-sion of CHWs was not conducted as planned
Observa-tions	SMART objective used with target	SMART objective, data summary table	District thinks QITs are important but too many competing activities		HC pushes for QITs	Feb meeting sounded like kick off	Unclear on use of tools or process	Fairly good use of process	Some confusion around process

The primary purpose of regular, monthly QIT meetings and data review is to create a continuous process of reviewing and addressing community health SC performance issues and/or CCM product supply issues – a quality improvement approach. What we observed is that the QIT interruption and frequency issues, along with potential lack of clarity on how to document follow-up and lack of current QIT tools, made it difficult to determine whether this was happening systematically in either original or scale up districts.

Although the case study team found evidence of use of tally sheets and making of action plans in both original and scale up districts, and the LIAT data also show most of the documentation found for QITs in original districts included action plans and SMART objectives (Figure 11 above), **it was difficult for the case study team to verify whether the action plans actually were followed up over a quarter to create the continuity that would maximize QIT effectiveness**. In one HC in a scale up district, the QIT documentation showed follow up on an unresolved problem for which the first action did not work; however, it was not possible to determine from the documentation whether other items in the action plan had been successfully resolved. Review of the QIT meeting notebook in the one original district HC that had restarted QIT meetings showed good use of data, and we were able to confirm continuous follow-up.

Observation of QIT Minutes, original district

QIT meeting notes were observed for the most recent meeting, which was conducted on 4 April 2014. The meeting was to evaluate March data, and the attendance list showed five members: the three members of the health center staff and two CCs. The March data presented the issue of performance problems with stock card accuracy for discussion. It was found in the data that 7.6% of stock cards for March were not accurately completed. The QIT meeting set the objective of increasing the number of CHWs accurately filling out stock cards from 92% to 100% (across 26 CHWs). The data summary tables illustrated these improvement objectives, and compiled the data from the tally sheets. In April they decided to follow up on these indicators during the April supervision visits, and the CHW supervisor was designated as the person responsible for this follow up.

In summary, interviews and review of QIT meeting documentation showed variation in implementation; HCs in original districts understood the process well but meetings were just revived recently and may only occur quarterly. The case study showed that QITs have yet to be well-established in scale up districts. While HCs in scale up districts were interested in QITs, using the tools and sometimes even holding meetings without district level instruction, **implementation of the correct process and content was inconsistent, indicating that integrated training only resulted in partial understanding of the process, follow up was needed to effectively establish QITs at most HCs.**

Perceived Barriers to Supervision & QITs

CCs and HC staff in both new and original districts mentioned heavy workload, and the additional burden of time and travel required for supervision and QIT attendance, as barriers to regular supervision and QIT meetings.

Respondents primarily identified one thing that contributed to QIT interruption in the original districts – discontinuation of the supervision allowances given to CCs. From the case study data, the removal of allowances was consistently cited by both CCs and HCs as the primary barrier to QITs – they discussed the demotivating, discouraging aspects, as well as how not receiving compensation for this work made it difficult for time spent on QIT and supervision to compete with time spent on IGA as their priority. Allowances set an expectation, and being asked to continue the same level of work with no compensation was universally demotivating among respondents in our case study, and a difficult barrier to overcome.

	Key Quote and Case Study Observation
Allowances as barrier to CCs for conducting supervision and attending QIT meetings	*“What parts of this process are not working as well for you?”* *"The RSP process works good with us because it’s well understood, the constraint related to it that, we used to receive 6,000 RWF provided by JSI but now it has stopped and remember our work as CHWs is based on our volunteerism, then imagine visiting all CHWs of a cell and attend the QIT monthly meeting while we should be doing our ordinary activities to earn living of our families…Before the project was supporting us with that allowance and the project was recognizing our huge work.”* CC, original district
	Observation of QIT minutes, original district Notes from the previous [QIT] meeting, held 3/7/2014, was used to evaluate performance data from February. A meeting to discuss January data was not found, and there was a significant gap in QIT meetings identified. The meeting prior to the one on March 7th, 2014 was held on March 20th, 2013. When asked about the gap in the QIT meetings, the CHW Supervisor responded that the interruption with meetings was due to a number of factors. The HC had invited the CCs to come for the meeting, but CCs were reluctant when allowances were no longer offered.

CCs and HC staff identified similar barriers to regular supervision and QIT meetings, namely heavy workload and the additional burden of time and travel required.

	Key Quotes
QIT meetings important, but allowances needed to practically attend meetings	*"Do you think QIT meetings were important for you?”* *“Yes, QIT meetings were important because they helped us to identify problems and find solutions. Considering their importance, we wish they may continue and if possible find from the central level how to provide allowances as motivation. For example, we travel for about two hours to reach the HC, which means four hours travelling to getting back home. So if it is a meeting day, all other activities are abandoned.”* CC, original district
	"Based on the importance you mentioned, do you think the QIT meetings will continue being conducted on the same monthly schedule?” *“During one of our last meetings, we were told that having QIT meetings on monthly or quarterly schedule will result from the supervision findings planed in June at the CHWs level. If we realize that some problems related to CCM products persist, we will decide according to the extent of problems found. You see, coming also at the HC monthly without any transport allowances is difficult for us, as we don’t have enough time for our ordinary activities (i.e. I travel 10 km to reach the HC, my colleague even if he is from nearby, we may have other activities to work on to support our families).”* CC, original district
	"How have you found the QIT meeting?” *“QIT meeting is very important; it helps us to identify problems faced by the*

	CHWs and find appropriate solutions. If at the HC, we are not able to solve some problems, we try to find who will be responsible for advocacy at the district level on timely manner…However, the only challenge we have with QIT relates to allowances we previously received to helping us attend the QIT meetings which have been stopped and that's very hard for us to travel a lot to HC (you know well that we work as volunteers). Some of our colleagues are discouraged, and this may have impact on QIT meeting participation." CC, original district
	"There are obstacles to the meetings, budgetary ones. The CCs no longer receive their allowances. The meeting lasts about two to three hours, and after that financing was stopped, it's difficult to invite for two to three hours without giving them anything. As those are hours where they could have been doing something else, we have to give them something." HC CHW Supervisor, original district

Even at the HC that had managed to re-start QITs, there was recognition of the CCs work burden:

	Key Quotes
Challenges for CCs in attending QIT meetings	*"What has been a challenge is that the CCs come when I call a meeting, but without the allowances they don't like to do that. I think with the allowances it would have been better. I think it actually helps get the CCs to the QIT meeting."* HC CHW Supervisor, scale up district
	"Are the QIT meetings still continuing now?" *"A little bit. Because you see, the CCs work a lot, but they don't get paid. They have to conduct supervision every month, and they have their own families and responsibilities on top of that. That's why they say that they should be getting a little something."* *"How has that affected the QIT meetings themselves? What changes have you seen after the discontinuation of the allowances?"* *"There are a lot of changes because they don't do much supervision, and that's because they don't get money. They also have other responsibilities—they have to treat their own patients. And now, they have the supervision checklist as well. So it can be a real handicap to the QIT meetings. A CC will have 68 CHWs and will only visit 20 of them. We can't extrapolate the results from the 20 CHWs and generalize to all 68."* HC CHW Supervisor, original district

In the scale up districts, despite the enthusiasm expressed, and the relatively light load of QIT-related work experienced by the time of endline data collection, CCs and HC staff also brought up the heavy workload, and the addition burden of time and travel required for supervision and QIT attendance as barriers to CCs, since the trade-off is they spend less time on IGAs. And despite no experience with allowances for supervision, they also suggested that small forms of compensation or appreciation, such as refreshments or even water, would help them overcome these barriers.

	Key Quotes
CCs spend time	*"How do you find the QIT meeting and what are the challenges related to them?"*

travelling and participating in meetings that could otherwise be spent in IGAs CCs use their own means for transport and imply that a token compensation either for transport or refreshments would be a motivator	*"The QIT meeting is very important, but we think later it will be difficult to us to participate in it, because it takes like two hours to reach here at the HC and the transport means it is difficult or getting a soda while we're participating in that meeting, it's needed."* CC, scale up district
	"You talked about the good things of the QIT meetings, on the on the other side what are the challenges related to them?" *"The challenges are related to lack of means, you see we come and attend those meetings; we leave our homes while we would be working on other living activities in our families, maybe if we could get something to facilitate us in transport to attend in the meeting or a Fanta when we attend in that meeting it will be good."* CC, scale up district
	"What challenges do you find with QIT meetings?" *"Ooh! You see we came from far for the QIT meeting and later after travel long distances to visiting CHWs in their villages. We do all this per volunteerism but it is really difficult for us. As we do not have time to perform our ordinary work, it would be better if we can have transport allowances to facilitate us to properly achieve our responsibilities."* CC, scale up district
	"What challenges are associated with QIT meetings?" *"No challenges specific to QIT meeting, the only thing we can say is that we come from far to attend in this meeting at HC level and like the next day we're invited in the HC monthly meeting we travel long distance. As CCs we're asked many things, like me as A.S.M you sometimes accompany pregnant woman to deliver at the HC, like today I come, I don't come from home because I spent last night at the HC because I accompanied a woman. This can cause us poverty because we don't get enough time to work on our ordinary activities to generate incomes for living our families. "* CC, scale up district

Role of Local Leadership: a HC Continuing to Hold QIT Meetings

In this original HC, because the QIT process was well established previously and benefits realized and appreciated by the team, motivation was high for continuing QIT meetings even without allowances. Leadership at the HC level enabled this to happen.

"How were you able to continue without allowances while others haven't?"

"The main reason is us. We saw that the QIT meetings helped us a lot. When the CCs do supervision, we can catch all the problems. We also do supervision and see many problems. So we said, 'why do we have these problems?' We said, 'let's have QIT meetings so we can solve these problems together'. So ***we included the QIT meetings into the description of our tasks,*** *and we encourage the CCs, tell them how we can help them and how they can help us. Encouragement is necessary, and we have to do follow-up because they are volunteers and they don't get any compensation. But in the end, it's not impossible to have CCs work hard without getting payment. It's a saying that we have here, sono anori. It means someone who can work hard for the good of everyone, for the good of the country without expecting anything…it's based on patriotism."* CHW Supervisor, original district

Benefits of QITs

Despite the variability in the frequency, regularity, and content of QIT meetings, **respondents at all levels in both original and scale up districts identified many benefits that they associated with QITs** (Table 5).

Table 5: QIT Benefits Identified by Case Study Respondents, by Type of Respondent

Type of benefit	Original		Scale Up	
	District A	District B	District C	District D
Analysis and Focus on CHW Problems; Helps CCs identify where problems are in their cells	CC, HC	CC, HC	CC, D	HC
Utilizes supervision data	CC	CC	CC, HC	CC
Allows for discussion of problems with staff at other levels	CC	CC, HC	CC, HC, D	CC
Increases collaboration among staff at different levels	D	CC, D	CC, HC	CC, HC
Allows for solutions by team members based on their roles (multifaceted solutions)		HC	CC, HC	CC
Provides regular time for problems to be brought by CCs		HC		HC
Establishes a timeline/accountability for problem solving		CC		CC

CC= Cell Coordinator; HC = Health Center staff; D = District health staff

Among these benefits, many were related to **appreciating that the QITs focused on CHW issues**, and helped CCs identify where CCM supply problems might be in their cells. It was recognized that the QITs provided insight into what was happening at the community level, in a group discussion setting, that allowed multiple staff at different levels to become aware and to make a plan for improvement.

The **critical role of CC supervision of CHWs and the data obtained through CHW supervision** in allowing problem identification and monitoring of CCM product supply issues was also identified by CCs and HC staff in particular.

	Key Quotes
How supervision data is used to complete the QIT process and cycle	*"Can you tell us about the QIT? How does it function?"* *"First, we do supervision. The six CCs supervise the CHW in their villages. We have a schedule for QIT meetings. The six CCs present the data that they've collected during their supervision visits in the villages."* HC CHW Supervisor, original district
	"How do you find the QIT meetings?" *"QIT meetings are very important because they help us to discuss all problems we identified during supervision and find quick solutions to them and determine*

	the timeline for actions we took, identify who is responsible of this action and evaluate its implementation status during the next meeting." CC, scale up district
	"The HC Data Manager, the CHW Supervisor and I meet with the CCs monthly. We ask the CCS to bring the tools that they use, like the RSW, the tally sheet and the integrated supervision checklist. We analyze data, identify problems together and try to come up with a work plan." HCPM, original district
	"I do supervision visits to CHWs in villages of my cell and identify what problems they have in relations to health activities and advise them on how to find solutions. For problems I cannot solve at my level, I report that to our HC, if the HC does not find solutions, it does advocacy at upper level." CC 1, original district *"What I can add to my fellow is that we also share identified problems in our QIT meeting at the HC in which sometime district staffs attend. I ensure CHWs of my cell have products to use to treat children and so I do requisition of products from our HC. I make sure that CHWs have in their stock at least one treatment they can use to treat a child who may be received seeking treatment."* CC 2, interviewed together, original district

Perceived Benefit	**Key Quotes**
Early identification of problems and planning	*"And what do you think are the benefits of the QIT meetings?"* *"They help identify problems earlier, for example, if there've been cases of diarrheal disease we know to have ORS available. They help support the CHWs, and if people are lapsing in their responsibilities the meetings can help to push them to make sure everything is done properly."* HCPM, original district
	"What are the benefits of the QIT meetings, in your opinion?" *"It helps us identify problems at the community level and analyze them during the monthly meetings. It helps us establish the work plan and set a timeline with information about 'who, what, when'. It also helps us conduct self-evaluations as QIT members—the Data Manager, the CHW Supervisor and the Pharmacist can make an assessment regarding RSP problems and find solutions."* HCPM, original district
Improved product availability	*"Now, we are sure that we have products available at the HC and at the community level. CHWs are assured that they have products to treat diarrhea, pneumonia and fever, so the HC only received complicated cases. This has helped families avoid long travels to come to the HC for treatment."* HCPM, original district

Another category of benefits identified by case study respondents at all levels was related to improved communication and collaboration. This was most pronounced in the scale up districts, most likely because the QITs were new. The improved connections and opportunities for communication and joint problem-solving seemed to contribute to team-building; while this focused on solving community-level CCM product supply issues through the QIT, our case study data suggests that this team-building may have spilled over to other areas of community health service delivery, as well.

Perceived Benefit	Key Quotes
QIT allows for discussion/ communication of CHW issues with staff at other levels	*"QIT meeting is good, it helps us working together and we help each other and we discuss on how we can improve our work and what you don't understand you ask your colleague to orient you how to do it."* CC, scale up district
	"*The meeting is good for the reason that it gives us an opportunity to discuss on different aspects of community health program and it reminds us about our roles and responsibilities in regards to that."* CC, scale up district
QIT increases collaboration and trust among staff at different levels	*"Ooh it is very important. We realize that these QIT meetings contribute to improve our collaboration with HC staff and though improve performance of CHWs' indicators as long as all problems we identified are discussed during these meetings and solutions are decided together. If we are not able to solve some of the problems identified, we ask HC staff to forward them to upper level (at district or MOH)."* CC, scale up district
	"With the RSP introduction in district, we now have good collaboration with HC staff especially the Pharmacy Manager when we need products, today our interactions with her are really good, we approach her and ask products with confidence. I can say it generally helped much in improving our relationship with HC staff because we cannot now feel fear to ask any question we need to ask, because we used to even in the same QIT meeting." CC, original district
	"What are the benefits of QIT meetings?" *"It improves our relationship with the HC staff and we use that occasion to discuss on some issues and they evaluate what we're doing as CHWs."* CC 1, scale up district *"The QIT meeting is good for us to interact with HC staff and we feel valued compared to before and we no longer feel they are our bosses and they inform us earlier so we can attend. And they don't stress us; we have not done well. Even if sometimes the communication does not go well, like last time I was informed about the QIT meeting a bit late, but again that is not always the case or a big problem, it may happen in many communication."* CC 2, interviewed together, scale up district
	"What I can say, we are happy because when we arrive at the HC, they help us to get medicines quickly, we have good collaboration with HC staff and it is very useful." CC, scale up district
	"Also the QIT meetings have helped to improve our relationship with the HC staff (especially Pharmacy Manager and CHW Supervisor), we know whom to talk to at the HC depending on the problems we have." CC, scale up district
	"Collaboration between CHWs and CCs were not happening before. With QIT meetings, we know the problems, the weaknesses and the actions that need to

> *take place. When I'm sitting next to CCs and hear from them, I can really understand their problems. And if it's a problem related to supply chain, I can help resolve it. The meetings are really good…Oh, let me also mention that there is now collaboration between the district pharmacy and the community. Before, we only worked with the HCs. But now, we are aware that we need to interact with the community level. It's a big deal."* District Pharmacist, original district

In summary, in all districts we saw that there was inconsistent implementation of QIT process (meeting frequency, regularity content, lack of uniformity of tools) and less data available from supervision and used in meetings, primarily due to CC workload. However, QIT meetings are widely perceived to be beneficial in **problem solving, finding local solutions** and **improving trust and collaboration.** There were a few variations between the original districts and scale districts:

- In the original districts, meetings happen less frequently, although when they happen, participation is high among HCs and CHWs (not District Coaches), the process is well understood but data availability and use has declined. The integrated training and letter from MOH were effective at restarting QITs in some districts/HCs
- In the scale districts, there is a high level of awareness of and interest in QITs, but very limited evidence of QIT addendum training reaching HCs to "kick off" QITs and explain the meeting process and reinforce use of data and tools.

District Engagement and QITs

In the scale up phase, district staff are critical to "kicking off" the QITs with the material they learned during the QIT addendum; the scale design was that three District Coaches are trained (CHW Supervisor, District Pharmacist, and M&E Manager) and one of the three district staff would initiate QIT meetings at each HC to establish the teams, provide the rationale for QITs, explain the meeting process, and go over how to hold a QIT meeting. District Coaches would provide follow up support to ensure meetings were scheduled and happening monthly and attend one meeting per quarter.

The endline evaluation found that **starting up QIT meetings takes focused initiative on the part of both HC staff and district staff** that have been trained as coaches and tasked with initiating QITs at HCs. In both original and scale up districts, the case study data showed that there was appreciation and enthusiasm for the idea of having QITs, but also confirmed that QITs require initiative from the district level to actually get started. Every level was looking to the higher one to push them to have QIT meetings. **Even the District Coaches who understood their vital role in QITs let them fall to the back burner because of competing priorities and limited time**.

District engagement with initiating or restarting QITs was minimal, often for the same reasons that prevented attending the meetings. In one of the scale up districts, the DCHWS was calling HCs and reminding them to hold the QITs, but was not attending or planning on attending. In one of the original districts, the District Coaches clearly recognized the importance of restarting the QITs, but admitted that they had not put pressure on the HCs yet because of competing priorities. In both original and scale up districts, receiving a letter from the MOH reminding them to make QITs a priority was identified by respondents as useful in maintaining their focus and enthusiasm.

The motivation for the district staff to follow up on the addendum training seems not to be sufficient, as there continues to be a disconnect between districts receiving the addendum training and both attending and initiating QITs. Although we verified that both scale up districts visited had had the QIT addendum training, of the five QIT meetings held in the scale up districts, we could only verify district attendance at the first meeting at one HC. This creates a situation where HCs hold QITs without the knowledge that District Coaches receive through the addendum training. Because HC staff receive limited information on

QIT meetings through the integrated training, based on the assumption that District Coaches will contribute, not having District Coaches deliberately kick off the QITs may pose a risk to the quality and team-building aspect of QITs meetings, and hinder achievement of the ultimate purpose of the QIT, which is to close the gap between actual and desired performance for RSPs and the community health SC.

The case study and LIAT survey data both show that **district attendance of QIT meetings was low**. In the LIAT survey, only six of the 16 HCs that had documentation of a QIT meeting showed evidence of participation of district staff (Figure 11 above).

Participation in QITs was not spread evenly between the three District Coaches trained on the QIT addendum. Where there was district attendance that we could verify, the DCHWS participated in only one HC's QIT meeting in one original district, and the District Environmental Health Officer in a scale up district was serving as District Coach and attended the first QIT meeting at one HC, with plans for the DCHWS to attend the next QIT meeting. The DCHWS in one original district reported attending QIT meetings in the previous few months; we could not verify attendance looking at the four QIT meeting notes from the two HCs we visited, but it was likely that the DCHWS had been to other HC QIT meetings than the ones we reviewed.

We could not find sufficient evidence that the DP attended any of the nine QITs meetings held since January 2014 in the original and scale up districts, although in three of the four districts, the DP reported that they had not attended. However, in the original district example of where a HC led the restart of QITs, the HC staff reported that the District Coaches, in particular the DP, was always available to them by phone, and were supportive in problem-solving even if they did not attend the QIT meeting. This may reflect the effort by the SC4CCM team to include the DP in the pilot period. In the scale up districts, DPs were generally less aware of QITs, and did not convey a commitment to engaging to the case study team.

District staff, as well as HC staff and CCs, stated in the case study that they faced scheduling conflicts and time constraints to attending QITs as well as doing regular supervision to the HCs.

	Key Quotes
Scheduling conflicts and time constraints for district staff	*"So you have spoken about the importance of the QIT meetings and their relaunch, in light of this new training next week, do you think you will participate in the QIT meetings in the future?"* *"Another problem is that we don't participate in everything, but we participate in some things. Sometimes, like I can't go to the May meeting, another meeting was called that I have to go to, so I call my deputy and see if he is available, so we try to participate as much as possible."* DCHWS, original district
	"How are you restarting the QIT meetings?" *"We tried to re-launch in February but were very busy with other activities. We've been talking about how to get the meetings started again. We have a plan to restart at the beginning of June. We have a meeting next week to discuss this issue."* DP, original district
	"What obstacle have you faced with the QIT?" *"Yes, the first problem at the HC level is that they are not conscious about QIT meetings. The CCs have other activities and think of the meetings as additional work that's being added on. But the QIT meetings improve their daily activities. Supervision of CHW takes a lot of time, but it helps the quality of their work. It's necessary to follow-up with them to make sure that they are doing this. I also do*

	supervision of my own, but sometimes that coincides with my other activities. There are no obstacles, other than this." DP, original district
	"Let's talk a little bit about supervision. Do you conduct supervision visits in any form?" *"Yes, we do it at the health center. Sometimes we're asked to join the hospital team for supervision, and we try to, but it's not easy for us. It's always difficult—we don't always have a vehicle for the team, so it's hard to organize those supervision activities and/or coordinate with the district hospital team. It's not easy, sometimes we can go twice per quarter and still not reach every health center, or a year can pass without visiting any HC. It's very hard for us to reach every health center, we try to call them but that's not sufficient. Because our district is not in an endemic area that doesn't have a lot of clients and so we get few revenues that we can allocate on supervision activities. It's not sufficient, but that cost always comes back to the pharmacy."* DP, original district
	"I also provide technical guidance during the QIT meetings. I'm not able to attend all the meetings, but for the HCs that are close, I can use public transportation to go at another time, or I can join when another team from the district goes to visit the HC." *"If you're unable to attend the QIT meetings, does anyone else from the district go?"* *"The District Data Manager or the District Pharmacist go. We make an agenda and specify which areas each one of us is supposed to cover. But even then, if I can't go to a meeting in an area that's assigned to me, one of them can cover for me if it's not too far from them. And I do the same for them."* DCHWS, original district
Visited HCs that are conveniently located	*"How many [QIT meetings] have you attended?"* *"I have attended three QIT meetings and the former Data Manager attended also three[4]. But for the District Pharmacist, I don't remember. I don't know if she found time to attend any; we plan together but she doesn't get time to attend them. But we've told her to attend the QIT meetings for the HCs located along the main road."* HC CHW Supervisor, scale up district
Visited all, with support	*"Do you conduct any supervision visits?"* *"Yes, this month I visited most of the health centers, but it was supported by the malaria control program."* District Pharmacy Data Manager, scale up district

In summary, district involvement is an important component to initiate and support QITs but is not currently happening at optimal levels.

- Evidence from case study and observation of QIT minutes shows that **district involvement in QITs minimal.**
- District engagement with **initiating or restarting QITs** was also **minimal**; motivation to **follow**

[4] This was not confirmed by the case study team; the two HCs visited in this district did not indicate that the DCHWS attended the QITs.

up seems insufficient.

- Where district engagement was seen it was usually the DCHWS; **lack of DP engagements** limits ability to influence PA.
- Time, scheduling conflict and competing priorities identified as **barriers** to district level physical presence at the meetings.
- Alternative forms of support are provided through phone calls to HC staff for QITs that were already established.
- **Evidence from two scale up districts show that the individual QIT components can be put in place through the training, but establishing an effective QIT is not possible without follow up support from the district.**

Linking RSPs and QITs: Correct and Consistent Use of RSPs

QITs were established to reinforce the use of RSP practices through the identification of performance goals and problem solving and by providing a regular forum to identify gaps in understanding and practice and address them. An expected outcome therefore of well implemented QITs would be improvements in measures of correct and consistent use of RSPs.

Although integrated training proved sufficient to convey knowledge of the proper use of RSP tools, and case study participants stated that the RSPs were easy to use, **correct use was not found to be consistent among community and HC staff in either original or scale up districts.** The LIAT survey reviewed stock card accuracy in three original districts and observed RSWs submitted to the HC by CCs; the case study included review of CC and HC RSWs and supervision documentation in the previous three months; and demonstrations of using the RSW and magic calculator by the HCPM). This finding is not surprising given that the endline evaluation also found inconsistent and unclear quality of QITs in all districts, as discussed in the previous section.

The LIAT review of stock cards at the HC level in original districts showed high accuracy for most CCM products (except zinc), although this decreased somewhat from midline to endline (Figure 12). There was a similar downward trend from midline to endline for CHW stock card accuracy (Figure 13), though less pronounced, and CHW stock card accuracy was better overall than HCs.

Figure 12: HC Stock Card Accuracy

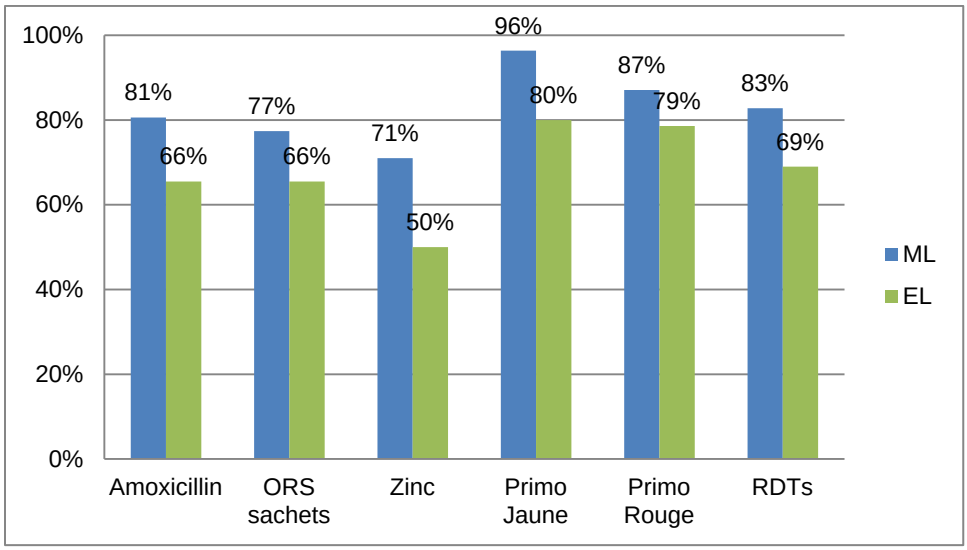
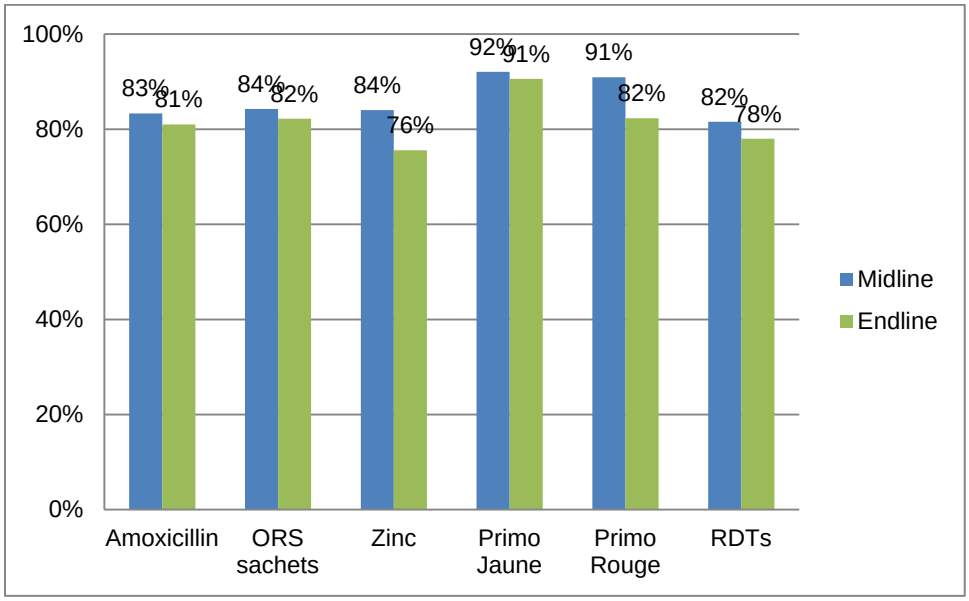
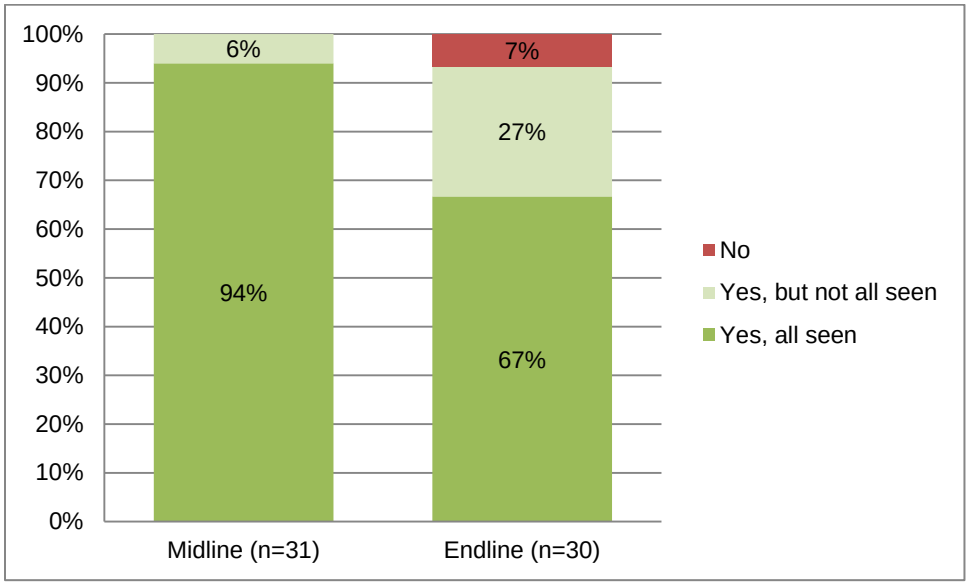


Figure 13: CHW Stock Card Accuracy



Use of RSWs and RSP processes by CCs improved at endline, as CCs reported continuation of RSP processes (cell meetings and reports submitted) however there was a decline in number of RSWs seen at HCPM. In the LIAT survey, the proportion of HCPMs in the original districts who were able to show all of the RSWs submitted in the previous month decreased from midline to endline, from 94% to 67%; seven percent did not have them at all. It is likely this relates to staff turnover of the HCPMs as discussed in the RPS section, however HCPMs without RSWs at endline could point to a gap in information flow to higher levels, potentially undermining district resupply decisions

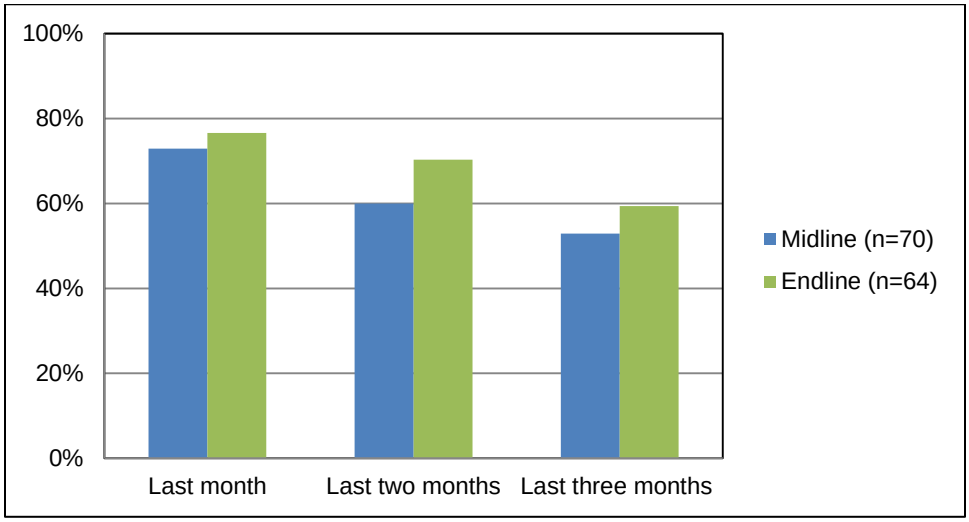
Figure 14: HCPM with RSWs Submitted by CCs at Last HC Monthly Meeting



The LIAT survey found that most CCs in the original districts (77%) had RSWs from the previous month, but more than half (59%) had RSWs for every month in the previous quarter (three months), which is

what is recommended. These proportions did not change much from midline to endline. 75% of the RSWs observed for the last three months were complete (had an entry for every binome in the cell)

Figure 15: Percent of CCs with RSWs Available for Past 1, 2, and 3 Months

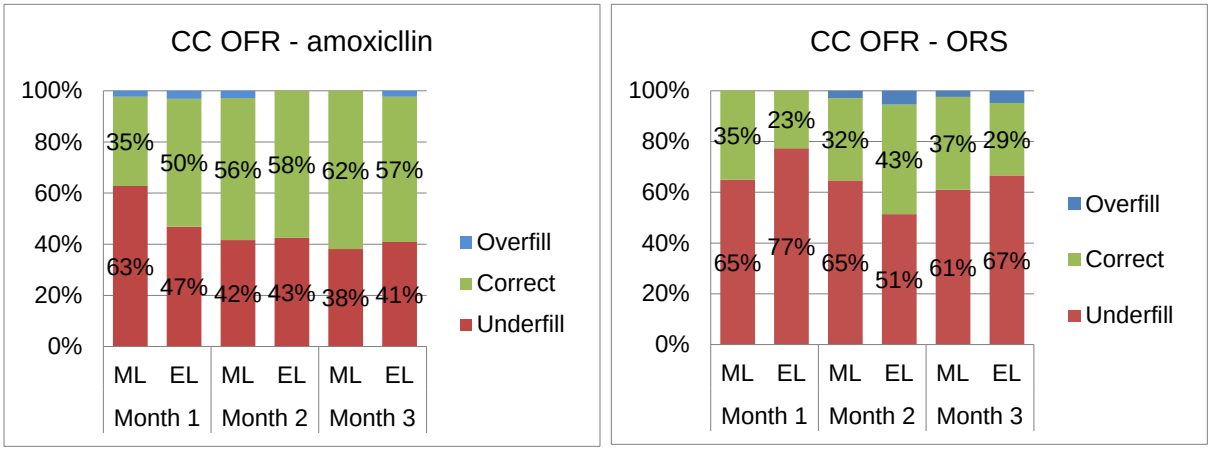


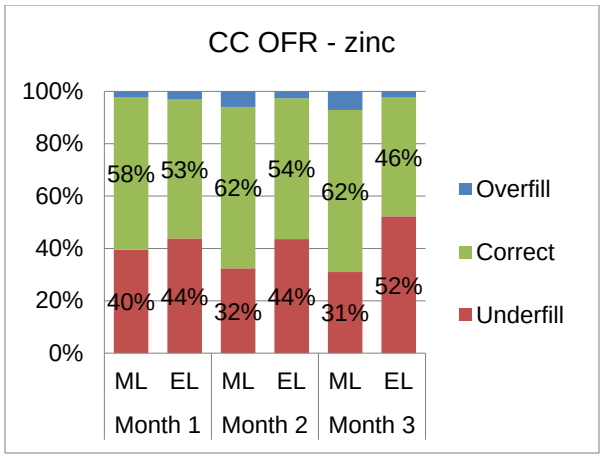
A similar situation was observed in the case study. Of the 16 pairs of CCs observed during case study data collection, only four pairs included at least one CC with three consecutive months of RSWs available for review on the DOV. Several instances of incomplete worksheets were found by the case study team in their observations in both original and scale up districts that introduced doubt about correct and consistent use of RSWs. Gaps in submission of the RSW were noted when HCs experienced stockouts or did not hold a monthly meeting.

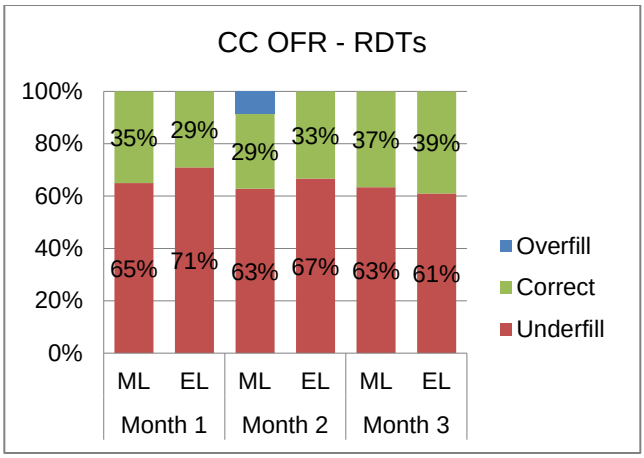
	Case Study Observations and Key Quotes
CCs with missing or incomplete RSW	Observation of RSW and review notes with the HCPM, original district The T, S, K columns were filled in for the different CHWs; H column was left blank. At the bottom, there were totals only for the T columns. When asked about what had happened in January, the HCPM couldn't give a specific answer. *"…maybe we forgot to fill the quantities at the bottom…I'm not sure"*
	Observation of RSW and review notes with the HC CHW Supervisor, scale up district "There are two RSW booklets here…how come?" [They were partially completed, with entries dating back to 2012.] *"We have four cells. There are two booklets in the community, with the CCs. And two are here…they should be with the CCs but they haven't picked them up."*
	"Do all four CCs always submit their RSWs?" *"There was a time when these forms weren't revised. The CHWs were confused as a result. There were old and new versions of the form. This lasted for a little while, and there were a few months when the CHWs stopped requisitioning with RSWs."* CHW Supervisor, scale up district

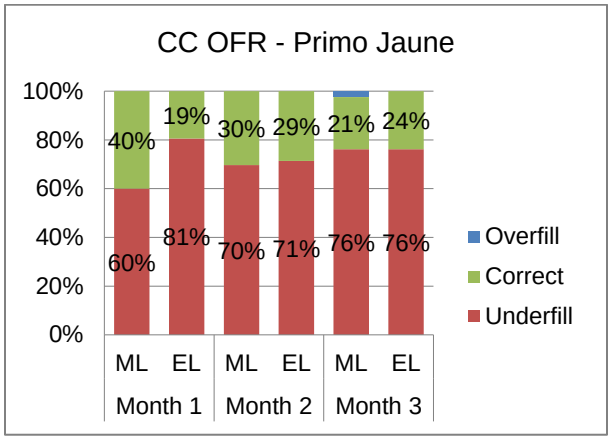
When we probed further to try and understand the reasons for not completing the RSW, we found that **the primary reason given for not consistently using the RSW is that CCs did not see the positive effects of using the RSW because of how they were re-supplied**. In both original and scale up districts, CCs complained about not receiving the quantities they requested. However, CC order fill rate (OFR) – the measure of how the amount received compared to what was estimated as needed per the order - improved or remained unchanged from midline to endline except for some malaria products.

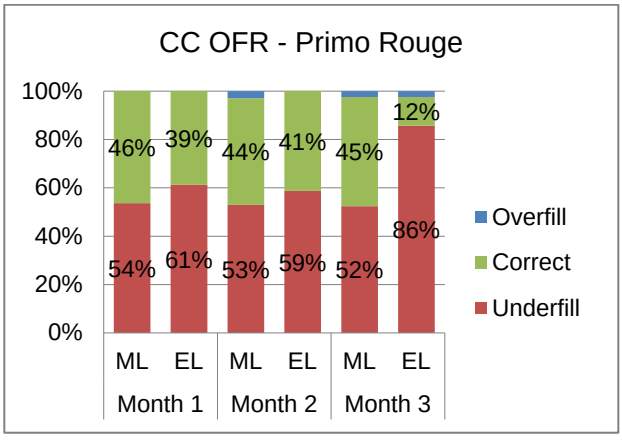
Figure 16: CC OFR of Individual Products at Endline











There were also **examples of incorrect use of the RSW originating from a misunderstanding of the purpose of RSP tools**, despite correct knowledge of how to complete the RSW. This was more evident in scale up districts than original districts, but examples were found in both. In one example, a CHW Supervisor in a scale up district indicated that products were oversupplied to CCs when possible as a form of preparation for times when district supply was limited, reflecting a lack of understanding of how the RSP should work. In another, the HCPM did not think that the RSW provided accurate data on CHW product needs.

	Case Study Observations and Key Quotes
Incorrect use of the RSW	Observation of RSW and review notes with the HCPM, scale up district *"I see for February more products were given than were requested by the CCs, why was that?"* *"I give them out as we have them available at the health center. So if we have more, to say more quantity is only relative to what was asked for in one particular month. If we know in the past the district has only given us few products, we account for that when we have more products available [*CHW Supervisor unnecessarily applies deficit from the previous month*]. So the number we give is relative to what we gave to them in the previous month. Because I see all the sheets, I know if you asked for a product before and didn't*

	get it. So with the previous month's need we use the extra quantity and divide it. We use the deficit from the past month."
	Observation of RSW and review notes with the HCPM, scale up district *"Where are the RSPs for February and March 2014?"* *"The CCs did not do them."* *"Why?"* *"The CHWs didn't need any medication during those months."* *"So, if medication doesn't need to be requested, the CCs don't submit RSP?"* *"No."*
	"Sometimes CCs submit the RSW and find that products are available in the requested quantities. If they are less than the pharmacy has, the pharmacist divides the available stock and keeps a reserve at the health center to avoid a stockout, and gives the remainder to CCs. There are some CCs who know that they have more patients than others (for the CHWs) and they prioritize them." HC CHW Supervisor, scale up district
	Observation of RSW and review notes with the HCPM, original district Amoxicillin (380 requested; 1000 supplied): the Pharmacy Manager couldn't remember the specific reason the HC gave the CC more product than she requested. *"We have the formula that we use to calculate the quantities needed, but sometimes that formula doesn't apply…sometimes the reality in the field is different and we find that CHWs need many more products than is indicated on the RSW."*

CCs in both original and scale up districts also voiced that the level of work required to complete the RSW was not justified when products were consistently not issued according to their requests. CCs, particularly those who oversee a large number of CHWs, did not complete RSWs each month when they were aware of continued stockouts of products at the HC level:

	Key Quotes and Case Study Observation
Incomplete RSW during stockouts	*"Have you noticed any challenges/obstacles related to the RSP?"* *"The big challenge concerns the time we take to filling the RSW for all our CHWs needs and when we reach the HC we unfortunately don't find the quantities we requested. Can you imagine the time we spend to make calculations for all CHWs products?"* CC, original district
	"I can tell you that because of this stockout of products at the HC, we have been discouraged to complete the RSWs." CC, scale up district
	Observation of resupply worksheet and review notes with the HCPM, scale up district

	"Why aren't the CCs requisitioning products with the RSWs?" *"Because of the stockouts."* *"But you have ORS and Zinc at the HC. Why don't they at least requisition for those products?"* *"Yes…[*pauses*] maybe they don't need the products."*

The in-depth interview excerpt below from a scale up district illustrates the way that CCs experience the relationship between the additional work required to follow the RSP and complete the RSW, which they believe will help them always have CCM products, and not realizing this benefit because of stockouts or under-supply, and how this results in deviation from consistently using the RSP and general demotivation.

Key Quotes

"How do you estimate needed quantities of medicines?"

*"We use this resupply calculator [*demonstration*], I verify the quantities each CHW used and the stock on hand and with this calculator, I determine the quantities of medicines he needs. But we presently have stockout of all CCM products."*

"When have you had stockout?"

"We have stockout since February 2014. They gave us low quantities of medicines in February which we didn't even record in the RSW, we recorded them on separate sheet and they were finished in few days."

"The stockout concerned what products?"

"It concerned all products: primo, RTD, amoxicillin, zinc and ORS. The ORS expired and we brought them back to the HC. Actually, apart family planning products, we don't have any CCM product[5]*. "*

"In this case of stockout, what do you do when you receive patients?"

"We only refer all patients to the HC and sometimes they don't even consult the CHW because they know they will not get anything." CC, scale up district

Understanding Under-supply of CCs

Our case study data show several reasons for why HCs were supplying CCs with less than requested quantities. Some referred to concerns about expiration dates and not wanting to supply CCs with products that would expire soon, because they would only have to bring them back to the HC. Some expressed that variations in product demand (geographic, seasonal) were not being reflected in calculations, and therefore the requested amounts were not what was actually needed.

	Case Study Observations
Reasons HC supply CCs with less than	Observation of RSW and review notes with the HCPM, scale up district *"How does the CC calculate what the CHW needs?"*

[5] This statement was not verified by the case study team and only expresses the respondent's perception of the stockout problem.

requested quantities	*"It is calculated based on the stock on hand."* *"Okay, so let's take an example. So if I am a CC and I have for example 100 amoxicillin, and I distribute 50 of them, but 50 remain in stock. How do they determine the need for next month?"* *"They may ask for 20 or so."* *"How would they need 20 instead of the 50 they distributed last month? There initial stock of amoxicillin was 100."* *"No, it depends on the number of sick children in the village, but also considering the children that were already treated. When I verify the RSW, if they have 100 for the initial stock, and they used 50, they will again request 50. But others they ask according to the remaining stock and the children who remain to be treated."*
	Observation of RSW and review notes with the HCPM, original district Primo Rouge (36 requested, 0 supplied) and Primo Jaune (24 requested, 0 supplied). The HCPM explained that because that area is not endemic for malaria, the minimum stock for each of these products should be 2, not 5. [This is correct, in the revised magic calculator, minimum stock of 2, not 5] Thus, she doesn't resupply the CHWs if they have 2 Primo Rouge and 2 Primo Jaune in stock. If she did resupply them, it would lead to overstock and eventually expiry at the CHW level.

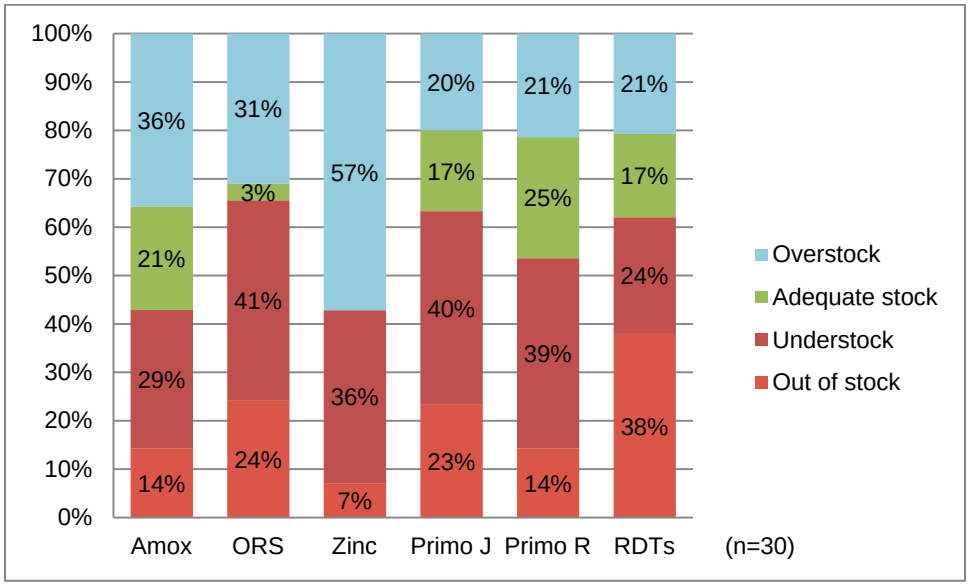
There was also mention of a HC incentive (indicator) to have products in stock. This could be a disincentive for HCs to release products to CHWs when they had low stocks, even though most of the products used at the community level are packaged specifically for CHWs and are not authorized for use at the HC level.

Mostly, however, **HC staff in both original and scale up districts referred to having low stocks themselves as the reason for under-filling supply requests**. When the case study team reviewed the previous three months of RSWs at the HCs in both original and scale up districts and identified under-filling of CHW request, the reason given most frequently was stockouts, or not having enough supply at the HC to fulfill each CCs requested amount of product.

The risk of undersupplying CCs are that insufficient stocks and under-filling orders undermines the system. If CCs and CHWs stop using RSPs, HC and districts won't have data to accurately request products and data on actual need will stop flowing upward, reducing data accuracy for quantification

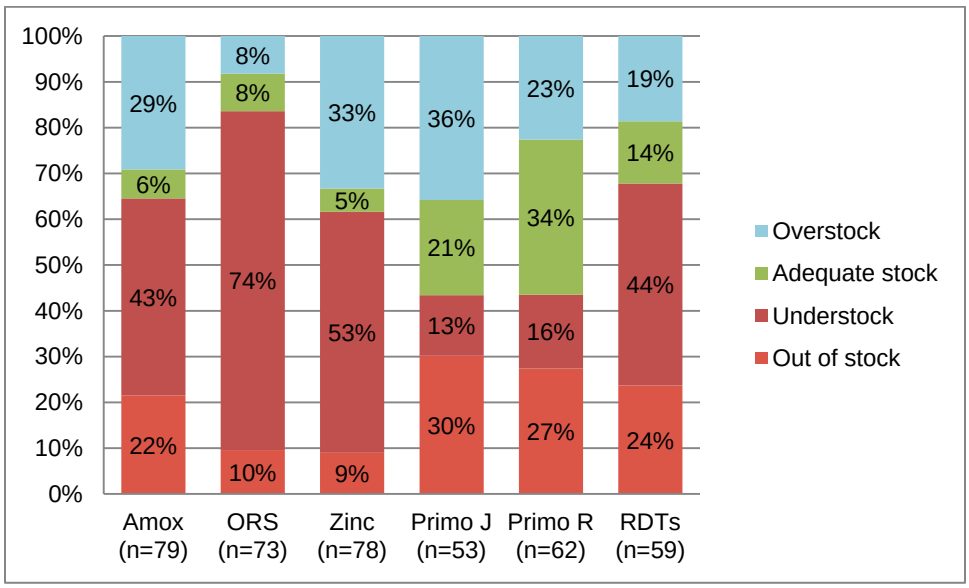
The LIAT data show that some HCs in the original districts were actually overstocked on the DOV (Figure 17) but that overall 43 – 65% of HCs were out of stock or understocked on the DOV, which would explain the high percentages of CCs whose orders were under-filled.

Figure 17: HC Stock Status at Endline



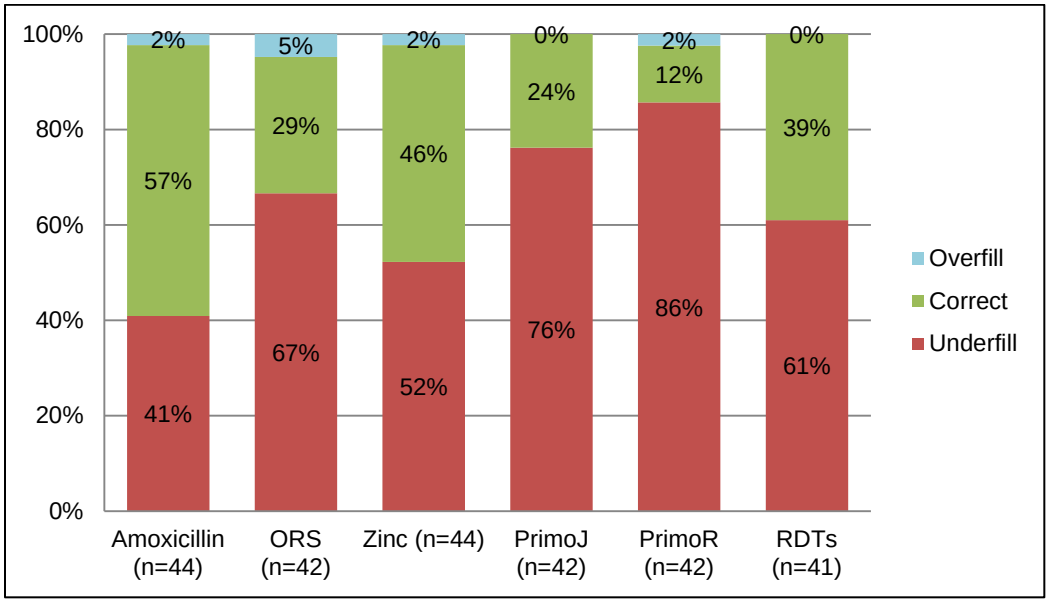
Comparing this to CHW stock status it is understandable why maintaining balanced stock levels is challenging as both HCs and CHWs are primarily under or overstocked; very few have adequate stock levels.

Figure 18: CHW Stock Status at Endline



Comparing the HC stock status to the CC OFR for all products, it's clear to see the relationship – CC OFR mirrors trends of stockouts and low stocks observed at the HCs. 43% to 65% of HCs visited were out of stock or understocked Over 40% of CCs were under-filled according the resupply quantities.

Figure 19: CC OFR at Endline (Month 3)



The in-depth interviews captured references to resupply practices that possibly reflected: a lack of understanding of the overall purpose of the RSW; low confidence in the way the quantities are calculated; a supply problem that reached up the SC to the district or national levels; or, a belief that adjusting the resupply quantities would help PA at the community level.

In the original districts, HCs and CCs recognized that the **RSP provided the accurate and accessible data that allowed redistribution among CHWs when stockouts were imminent**. HC staff and CCs in the original districts and one scale up district both identified this as one of the benefits of using the RSP; however, this did not emerge so strongly from HC and CC case study participants in the scale up districts, most likely because they had a short duration of experience with the RSP at the time of endline, and there was limited experience with QIT meetings, which were designed to reinforce the understanding and practice of RSPs.

Perceived Benefit	Key Quotes
RSP provides accurate and accessible data that allows redistribution among CHWs to avoid or address stockouts	*"With the RSP as a CC you know in which village there are still much product due to lower consumption compared to some other villages and you can collect them and redistribute them to binomes* [CHWs] *who don't have or remain with few quantity to avoid stockout. It helped much in improving our knowledge on CCM products management."* CC, original district
	"Another thing is that now the CHWs are informed about redistribution. If there are products with one CHW who doesn't have many clients, and another CHW has run out, the latter can borrow from the former." DP, original district
	"But now, thanks to the training and tools like the stock card, RSP and magic calculator, the CHWs are able to determine the quantities that they need. In addition, since the training, the CHWs know that if they have a stockout, they can borrow from another CHW and treat their patients before coming to the HC for resupply." HCPM, original district

	"After the RSP training the disorder in requisition of products ended because now CCs bring requisitions of cells prior to the HC monthly meeting, we also now know that if a CHW is stocked out on some product, s/he can borrow to the neighbor in his/her village. We now know what the minimum stock level is and when we reach it we should look for other supplies to avoid stockout." CC, original district
	"It helped in decreasing the disorder which used to be in requesting CCM products and now the way we're requesting products it's well organized. With the RSP, CHWs can even borrow products from their neighbors in the villages to avoid stockout. This process is helpful to ensure products availability at community level." CC 1 *"To me this process comes as very helpful, because it helps us to always have products in stock to use whenever parents bring their children and find that we have products it increases how they trust us CHWs and this builds our confidence to CHWs."* CC 2, interviewed together, scale up district

Key reason	**Quote**
CCs did not see the positive effects of using the RSW when they are under or not supplied by the HC.	*"I can tell you that because of this stockout of products at the HC, we have been discouraged to complete the RSWs."* CC, scale up district
Low product availability at HC	*"If I don't have enough medicines, I distribute what I have to the CCs who live far from the HC, and I tell the CCs and CHW who live closer to refer their patients to the HC."* HCPM, scale up district
Misunderstanding of the purpose of RSP tools	*"I give them out as we have them available at the health center, so if we have more. To say more quantity is only relative to what was asked for in one particular month. If we know in the past the district has only given us few products, we account for that when we have more products available."* CC, scale up district
Level of work not justified when products are unavailable at HC	*"The big challenge concerns the time we take to filling the RSW for all our CHWs needs and when we reach the HC we unfortunately don't find the quantities we requested. Can you imagine the time we spend to make calculations for all CHWs products?"* CC, original district

In general, the LIAT survey and case study found evidence that correct and consistent use of RPSs is limited. Despite good understanding of resupply practices, there is a lack of consistency in correct use of RSPs found among community and HC staff in original and scale up districts. Case study findings confirm that reinforcement and support from QITs are needed to ensure consistent and correct use of the RSPs (training alone is insufficient). The slow initiation and uptake of QIT meetings has hampered reinforcement. An almost 30% decline in HCs with RSWs available at endline (compared to midline)

points to a gap in community level logistics information flow from HC to district levels, potentially undermining district resupply decisions. And low levels of district engagement in QITs provide little opportunity for districts to identify this and other potential bottlenecks that impede PA.

Key Findings: Product Availability

The primary objective of the SC4CCM project in Rwanda was to improve PA for sick child management at the community level. The effectiveness of the SC4CCM intervention on improving PA was demonstrated at HC and CC levels at midline. For the endline evaluation, we were interested in assessing whether the PA improvements were sustained in the original districts, even though the results required careful interpretation since the intervention itself changed significantly based on the midline results and plans for scale up. As in the midline, the endline LIAT survey measured different dimensions of PA:

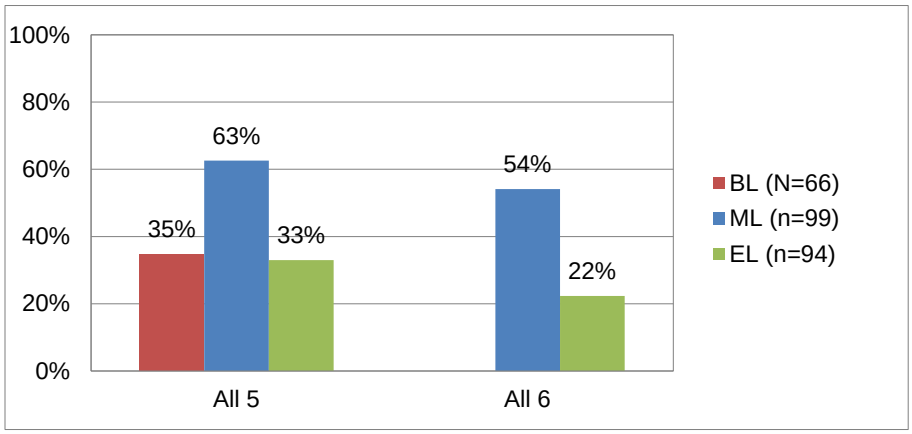
- **Product availability** – whether all five (baseline, midline, and endline) or all six (midline and endline) CCM products were in stock on the DOV. PA is considered to be the summary indicator for SC performance.
- **Stock status** – by product; whether there were sufficient, insufficient, or over sufficient quantities on hand on DOV, based on consumption and months of stock on hand. Stock status provides a more comprehensive picture of **whether** the SC is functioning in a "rational" manner, keeping stocks within the sufficient range.
- **Stockout** – by product; a sub-category of stock status, when the stock on hand on DOV is zero. Avoiding stockouts is a key objective of improved SC management. A stockout of any product means that PA across a set of products is not achieved.
- **Six month stockout rate** – how many times any product quantity was zero in the preceding six months. This is assessed by reviewing stock cards and is a more reliable means of assessing stockout rates than DOV.
- **Duration of stockouts** – the length of period the product balance was zero. This is assessed by reviewing stock cards.

The case study did not try to assess current PA in terms of quantities, but focused on how users of RSPs and participants in QITs and the SC processes from district to CHW level perceived changes in PA since using RSP; during analysis, we also assessed whether the perceptions matched at different levels within the community product pipeline.

To understand PA and the role and contributions of RSP, we looked at all these LIAT survey indicators as well as data from the case study interviews, document review, and observations to try to construct a complete, though somewhat complex, picture.

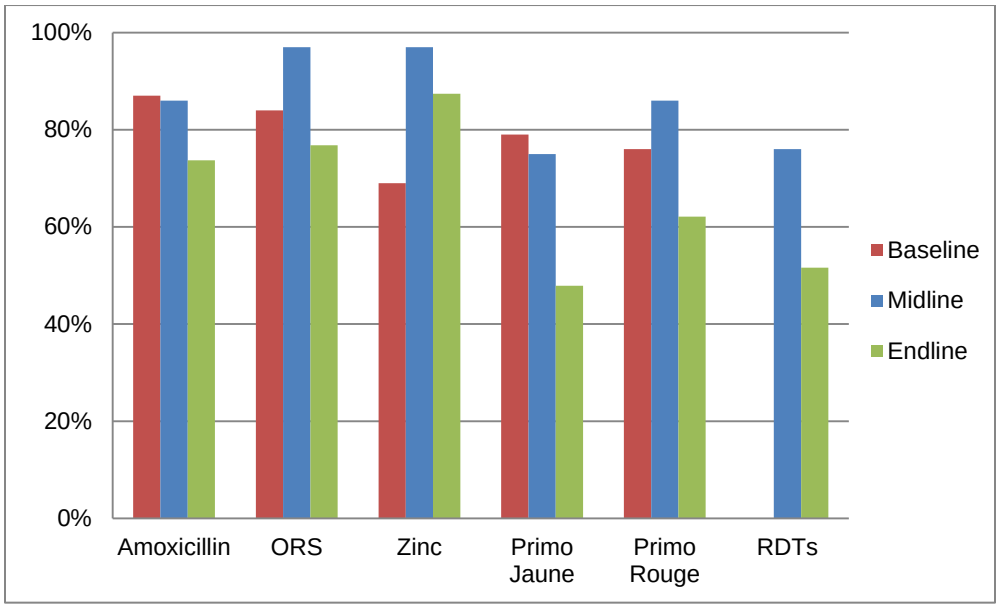
Data from the LIAT show that **all five PA among CHWs returned to baseline levels after reaching a peak one year earlier, when midline measurements were made in the original districts** (Figure 20). While this may first appear as a failure to sustain initial pilot project effects, it is important to recognize that **the intervention was substantially changed and not fully implemented between midline and endline, so that what was assessed at endline was in many ways a new, partially implemented intervention, even in the original districts**. As described above, the most significant changes, in addition to a reduction in project inputs, included: 1) removal of allowances provided to CCs and District Coaches; 2) introduction of integrated training and supervision; and, 3) changes in both the magic calculator and the recommended QIT tools. For PA, the first change most likely had the greatest effect, since it directly affected CCs motivation to conduct regular supervision and attend QIT meetings, while at the same time reducing the regularity of QIT meetings since District Coaches were much less likely to attend. Further, the community interventions are not the only factor affecting PA, outside factors that affected PA at the national level (like procurement) probably had an impact as well, but we could not control for or dissociate these with this endline design.

Figure 20: CHW Product Availability in All 5 and All 6



Individual PA also declined for all products from midline to endline.

Figure 21: Percent of CHWs In Stock on Day of Visit



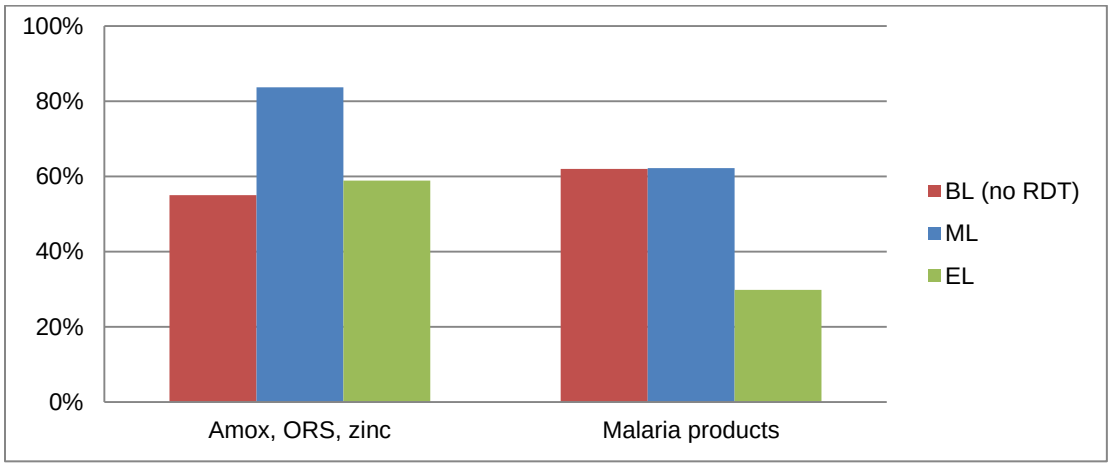
Low availability of malaria products in particular was identified most consistently by case study participants in scale up districts, along with amoxicillin. The LIAT data show that this may also have been a problem in original districts, although it was not identified specifically by case study participants (Figure 21).

	Key Quotes
Low availability of malaria products	*"Problems with amoxicillin, ORS, zinc, Primos (both Jaune and Rouge), we requisition and receive few Primos, for each Primo we receive few products… The medications are not available at the district level so that's why at the health center we have stockouts."* HC CHW Supervisor, scale up district

	"We don't have amoxicillin at the HC. I asked the district pharmacist last week and he told us that he didn't have any. There are no Primos at the district either. We follow up with the district pharmacist…he told us to come back at the end of the month." HCPM, scale up district
	"The stockout of some products is also a challenge for us, like in this period we a stockout malaria products (Primos), RDTs and gloves." CC, scale up district
	"Ok, the main problem is the stockout of malaria products (both Primo Rouge and Jaune, RDTs and gloves) and sometimes we receive medicines which are about to expire. For malaria, the chance we have is that our zone is not very endemic…We have stockout of malaria products for almost five months. The last we received expired and we brought them back at the HC and since then we haven't received new products yet. We ask the Pharmacy Manager about this problem but he said the stockout is at the district pharmacy level." CC, scale up district

In order to better understand how much the malaria products contributed to decreases in overall PA for the all five/six CCM products we looked at changes in PA for the three non-malaria products compared to malaria products in Figure 22. There was a decline in both groups from midline to endline, but less dramatic for the non-malaria products.

Figure 22: CHW Product Availability by Product, Malaria vs. Non-Malaria



There was some supporting information from central level, and some insight from one HC regarding the malaria product stockouts in a scale up district after the case study team reviewed the stock card and RSWs from the CCs, but not enough to clarify where the supply disconnects are actually occurring,

	Key Quote and Case Study Observation
Unclear explanation(s) of supply disconnects for malaria products	*"We are seeing disconnects about malaria product stockouts – any idea what could be explaining them?"* [smiles, and clutches head] *"Sometimes I have a pain in my head from this situation. Maybe the district keeps the products, and doesn't give to HC? Some HCs refuse to give to CHWs – see they keep and get cost recovery, but from*

	CHWs it is free. The HCs also get fewer than requested from district – if there are stockouts in Camerwa, then district doesn't get all they need. There is a problem with the order fill rate – really it is a problem between MPPD [Medical Procurement and Production Division] *and district pharmacy, but it can affect even the HC. See, when they evaluate the store managers – they don't want to be found with stockouts. PBF has also influenced the situation – when the evaluator sees zero stock, they don't get the funds. They want to show some numbers on the stock card."* Central level
	<u>Observation of RSW and review notes with the HCPM, scale up district</u> After interviewing the DP and finding out that this HC had 38 Primo Rouge, the case study team asked a few follow-up questions to the DP. On the HC stock card, the case study team verified that the HC has had 38 Primo Rouge since January 2014 that it hadn't used. When asked about why she didn't distribute these quantities to the CHWs, the DP replied: *"Firstly, because the quantity isn't sufficient to meet all CHWs' needs,* [and she didn't want to create a situation where some CHWs had product and others didn't] *secondly, because Primo Rouge cannot be administered without first confirming malaria, and this cannot be done since there's an RDT stockout."*

The LIAT data on stock status showed an increase in stockouts at endline for all products at CHW level and similar levels of adequate and overstocks at midline and endline (Figures 23 and 24).

Figure 23: CHW Stock Status at Midline

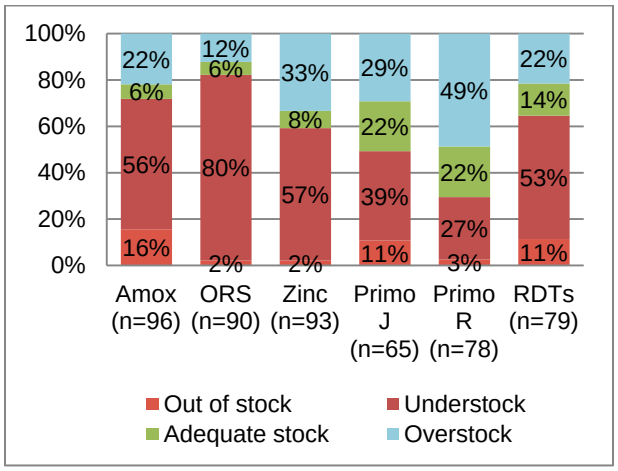
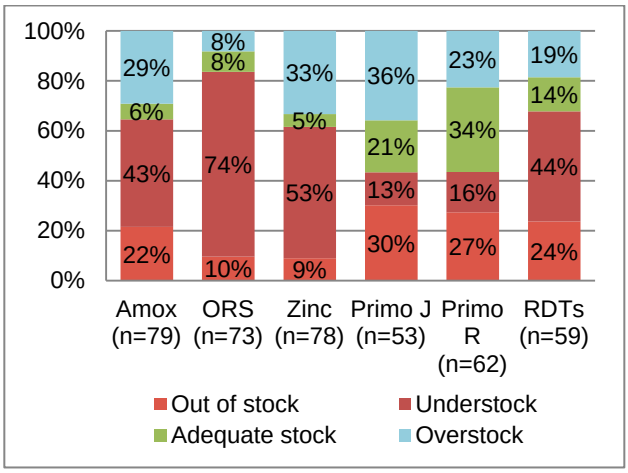
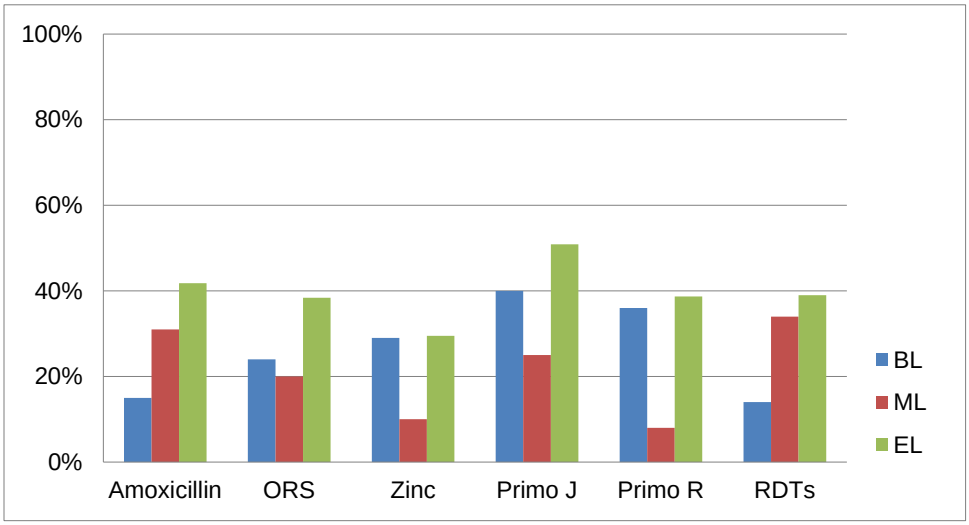


Figure 24: CHW Stock Status at Endline



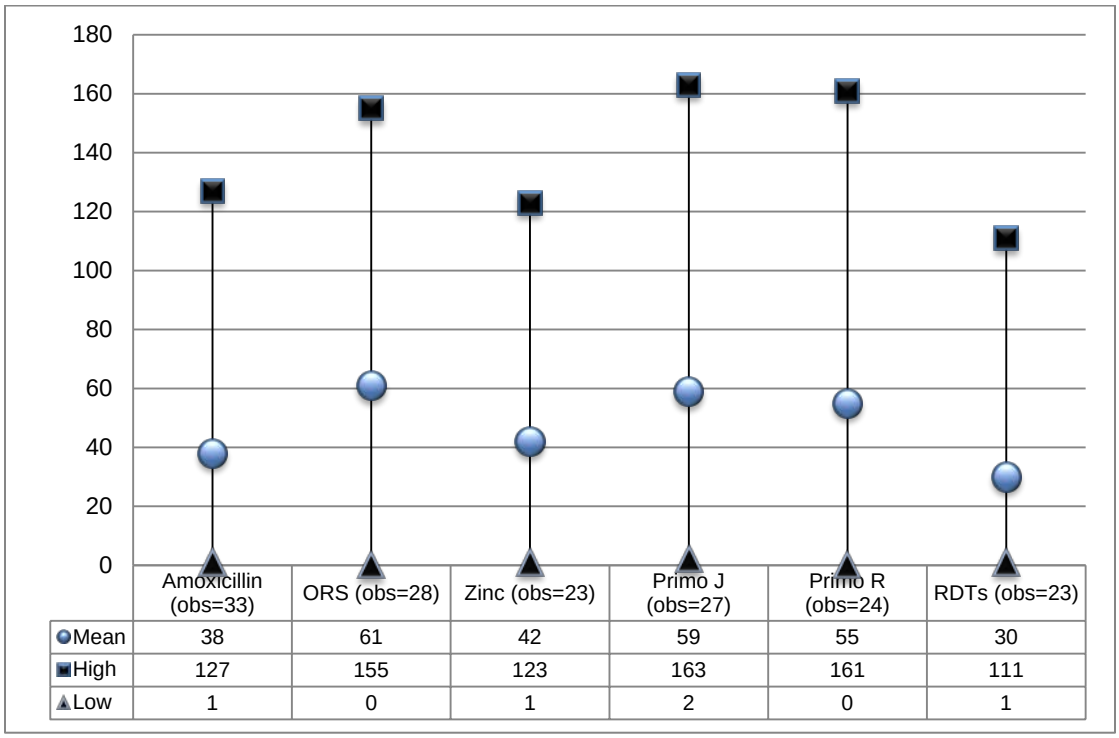
A review of CHW stock cards also shows that stockouts of most CCM products in the previous six months were either closer to, or greater than, baseline levels (Figure 25). CHW stockout rates on DOV were below 50%, but these stockouts were prolonged. Amoxicillin, ORS, Primo Jaune, and RDTs had the greatest increases since midline and baseline; all six products were found to have more stockouts at endline than midline.

Figure 25: CHWs with Stockouts in Last 6 Months



LIAT data further show that CHW stockout duration was highly variable, lasting anywhere from one to 163 days of the previous180 day period, with an average of 30-69 days depending on the product and district. It is important that note though that the stockout days presented here are not necessarily continuous and may have been spread out over the six month duration

Figure 26: Mean # of Days Stocked Out at CHWs in Last 6 Months and Range



	Amoxicillin (obs=33)	ORS (obs=28)	Zinc (obs=23)	Primo J (obs=27)	Primo R (obs=24)	RDTs (obs=23)
Mean	38	61	42	59	55	30
High	127	155	123	163	161	111
Low	1	0	1	2	0	1

Figure 27: Number of CHW Stockouts Over Past 6 Months Lasting > and < 3 Days, 5 CCM Products

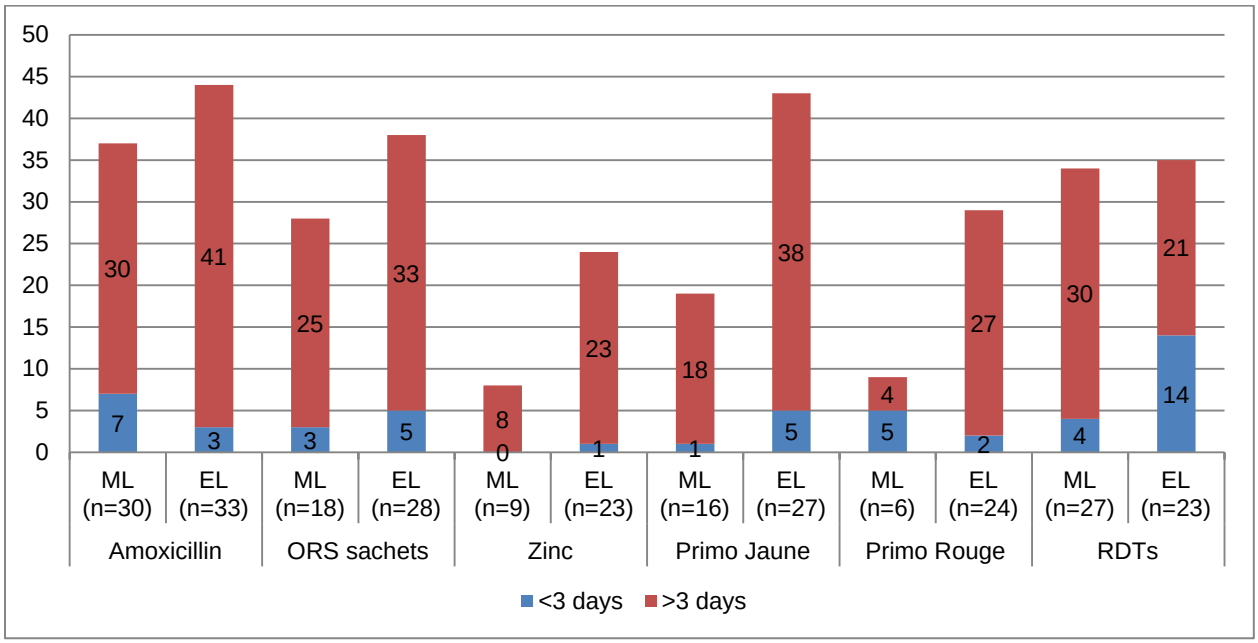
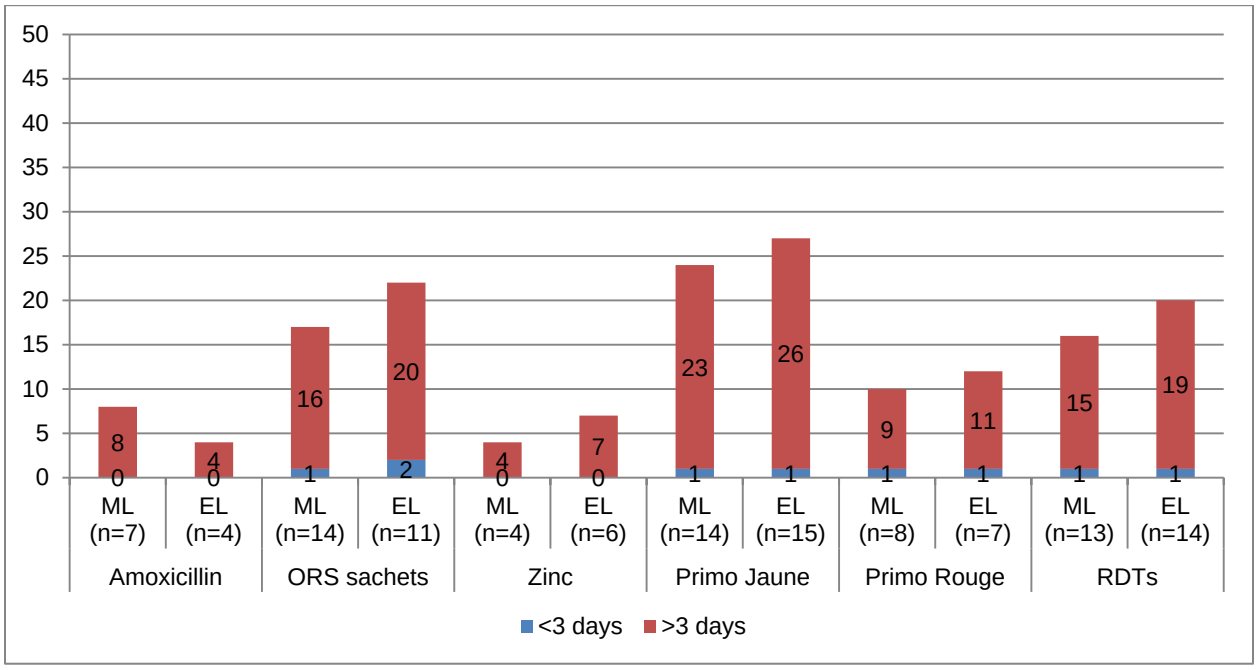


Figure 28: Number of HC Stockouts Over Past 6 Months Lasting > and < 3 Days, 5 CCM Products



The LIAT survey findings showing that PA may have deteriorated over the preceding year were reflected in the case study data from the original districts. Low stocks and stockouts were identified as specific problems by the CCs interviewed in the original districts. HC staff in original districts also identified past and current problems with CCM PA. Low stock situations at the HC for several products, especially malaria products such as RDTs, were mentioned, but were not identified as a problem at the community

level. HC staff in general believed that PA had improved since the RSP had been implemented. This was true for Primo Jaune, according to the endline LIAT data (Figure 29); in general, any decreases from midline in all six PA at the HC level were not as pronounced as at the CHW level. However, LIAT survey data from 173 HC stock cards show 57 HC stockouts happened in the preceding six months, across all six CCM products. The mean duration of HC stockouts ranged from 24 to 85 days long depending on the product, with amoxicillin having the shortest period of stockout and Primo Jaune the longest. **This may imply that stockouts were associated with challenges that HCs could not resolve directly, and instead were related to product related challenges at district and higher levels.**

Figure 29: HC Product Availability by Product

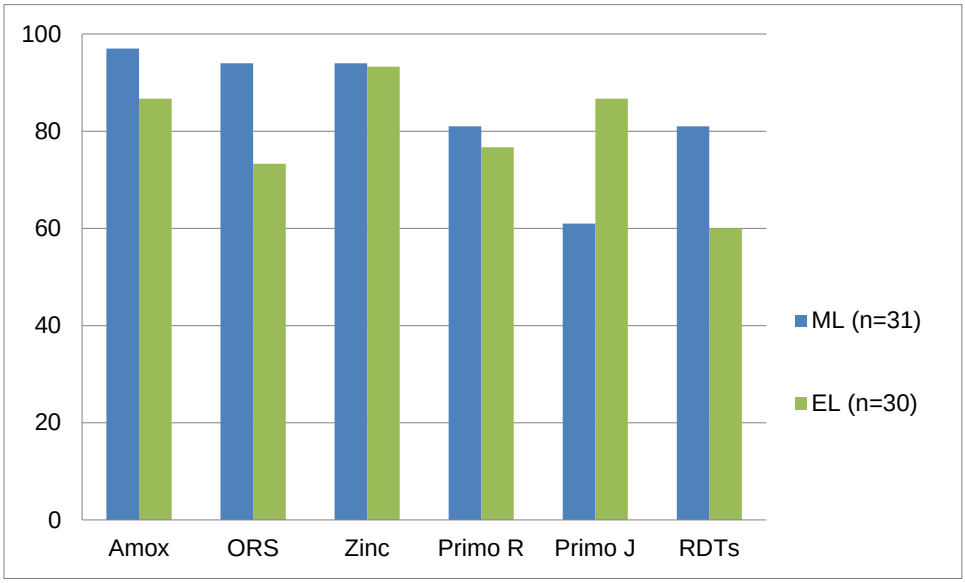
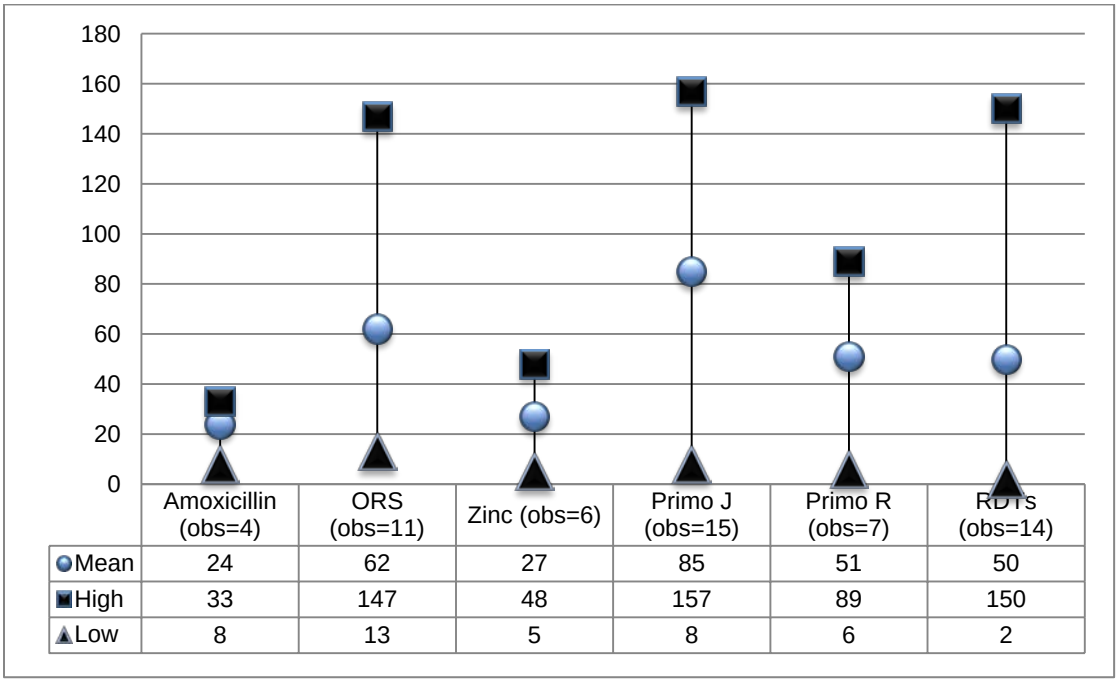


Figure 30: Mean # of Days Stocked Out at HCs in Last 6 Months and Range



	Amoxicillin (obs=4)	ORS (obs=11)	Zinc (obs=6)	Primo J (obs=15)	Primo R (obs=7)	RDTs (obs=14)
Mean	24	62	27	85	51	50
High	33	147	48	157	89	150
Low	8	13	5	8	6	2

Relationship between CHW PA and Higher Level PA

As mentioned earlier, it is difficult to know how much of the decline of PA at endline is due to the interventions or other external factors. One of the main potential factors that affected PA at the CHW and HC level is product shortages at higher levels. Anecdotally, the survey team heard about stockouts and shortages of some products caused by expiries and delays in procurement. The RSPs and QITs can only strengthen the SC if there are sufficient quantities of products available in the system to resupply HCs and CCs/CHWs and if all the links that ensure product and data flow in the SC between levels are operating effectively.

Another factor that may have affected PA specifically for malaria products may be the mechanism used by the malaria program to determine resupply quantities for distribution to districts. The National Malaria Control Program uses case data and level of malaria endemicity to determine resupply quantities by district. Malaria products are distributed based on a distribution list originated by the National Malaria Control Program that provides the quantities for distribution in each malaria zone. This is in an effort to ensure that wastage and expiries are reduced in low transmission zones while ensuring that endemic areas receive sufficient anti-malarials. The original districts we worked in fall under malaria endemic (Ngoma) and low transmission zones (Nyabihu and Rutsiro). The low transmission districts therefore received a much lower allocation of antimalarials which was insufficient to ensure that each CHW in the district had at least one malaria treatment for a sick child (as required by RSPs). This mechanism of distributing by caseload and not according to SC rules could explain the higher stockout rates on DOV in Nyabihu and Rutsiro districts compared to Ngoma – a high malaria transmission zone that received a much higher district allocation.

Relationship between CCM PA and CHW Services

PA problems were clearly identified as a challenge to CHW performance of SC tasks and provision of services. CCs and HC staff in the scale up districts mentioned low PA as a primary obstacle, and they drew a clear relationship between low PA and inconsistent use of the RSW, as well as erosion of trust in CHWs from the community. In the original districts, CCs in the case study also often identified the link between having CCM products and being proud and confident in their work, as well as gaining trust from the community.

	Key Quotes
Erosion of trust in CHWs from the community	*"Our main challenges regarding this process is the stockout of products, when parents bring to us their children and found we don't have products in stock, we lose their trust in us and we also don't feel very confident as CHW because citizens share information among themselves such as - don't take your child to that CHW, he does not have products."* CC, scale up district
	"How do stockouts affect the RSP?" *"Yes, the CHWs say that the community is losing confidence in them. A mother brings her child who has a fever to the CHW but can't get any treatment because of a stockout. Or maybe one parent will bring her child and get treatment, and her neighbor will bring her sick child the next day and won't get treatment because of a stockout. That parent becomes every angry when the CHW refers her to the HC. These situations create a lot of tension in the community."* HCPM, scale up district
	"In this case of stockout, what do you do when you receive patients?"

	"We only refer all patients to the HC and sometimes they don't even consult the CHW because they know they will not get anything." *"Does stockout affect your activities?"* *"Yes, of course yes, it affects the service we provide. Imagine the long distance patients go to seek medications at the HC and this increases the workload of HC staff. It also affects us, when you don't practice, you may forget some procedures and we lose confidence in the community as long as community knows that we are no longer providing any health services. Some CCs may also be demotivated to even conduct supervision; it is like going for farming activities without materials."* CC, scale up district
	"What do you do now when you receive a client (child) who needs treatment?" *"We just refer them to the HC level, because we can't do anything else at our level and in these days citizen do not even first pass to us to look for referral form to go to the HC as they know we no longer provide treatment, they are losing trust in us."* CC 1 *"And this is even embarrassing who should be accessing treatment of their children in the villages where they live and now they have to travel long distance even during nights especially when a child has a high fever."* CC 2, interviewed together, scale up district
	"Do the stockouts affect CHWs?" *"Yes, its affects them significantly*. [Short interruption for phone call] *As I was saying, normally we are in a rural area and people use to visit CHW seeking medication and if they go there one up to three times without getting anything, you can understand. At the fourth time, they will no longer go there. People have started not going to CHWs while they used to go there before. They doubt about CHWs."* DCHWS, scale up district
	"Can you tell us about the factors that have changed in this new process?" *"The first is ownership. Another factor is that, if there is a death in the community for a child under five, it is like a scandal. The root cause may be a stockout of drugs, and maybe it serves as a motivation to work harder."* *"Are there any challenges maybe that you would anticipate with this process?"* *"The stockout of drugs is the first challenge."* DCHWS, scale up district
	"With RSPs, we have dignity in our cell and villages because community know we have products in stock to provide health care to their children." CC, original district

CCs and HCs in both original and scale up districts that were included in the case study identified improved CCM PA as more of a potential or future benefit to using RSPs. More often, the benefits of RSPs were articulated in terms of better organization to the resupply process, clearer data and accountability, increased collaboration with HCs and among CHWs, and improved ability to manage expired products. **The most immediate PA benefit identified by HCs and CCs was improved ability to redistribute products among CHWs and CC.** This resulted from having routine, accurate data on product consumption through the RSP, so that CCs and HCs stated they are now able to determine

whether CCM products were available to be shared from one CHW to another. This may have helped alleviate stockouts at the CHW level, but was a tactic to manage stockouts, rather than a strategy to prevent them.

	Key Quotes
Improved ability to redistribute products among CHWs and CC	*"How is this process* [RSP] *working for you and how did it help community SC?"* *"It helped in decreasing the disorder which used to be when requesting CCM products and now the way we're requesting products, it's well organized. With the RSP, CHWs can even borrow products from their neighbors in the villages to avoid stockout. This process is helpful to ensure products availability at community level."* CC 1 *"To me this process comes as very helpful, because it helps us to always have products in stock to use whenever parents bring their children and find that we have products it increases how they trust us CHWs and this builds our confidence to CHWs."* CC 2, interviewed together, scale up district
	"Presently, CCM products are available, we don't experience stockouts as we did before especially with Primo Jaune. We now know that one CHW can borrow from his fellow if the needed medicines are not provided yet." CC, original district
	"After the RSP training, the disorder in requisition of products ended because now CCs bring requisitions of cells prior to the HC monthly meeting, we also now know that if a CHW is stockout on some product, s/he can borrow to the neighbor in his/her village. We now know what the minimum stock level is and when we reach at it we should look for other supplies to avoid stockout. With RSP training we know which responsible person among HC staff who should give us products instead of asking whatever HC staff we found in the HC compound or the HC Titulaire." CC, original district
	"For products availability, there is no constraints I can mention, because now each CHW has in stock at least one treatment for each product to treat one child which is different compared to before the use of RSP and where we couldn't even know we're near to get stocked out." CC, original district

Perceptions of PA at CC, HC, and District Levels

Among all four case districts, the DP was either unaware of PA problems at the community level, or acknowledged that there was insufficient information from the community level to allow an assessment of the PA situation at community level.

	Key Quotes
Insufficient information from the community level	*"Actually, throughout the last few years, there's been an evolution in product availability. It's been very positive because now, there are no stockouts at the district pharmacy and in the HCs. What I can't confirm is the situation at the community level. If there are problems with product availability at the*

	community level, it's a problem with the liaison between CHWs and the HCs." DP, original district
	"It happened that at the district pharmacy there was a stockout, but if that is so it affects the community and health center level. I don't know much information at the community level." DP, scale up district
	"Can you describe the changes you've seen since implementing the RSP? Since the RSP has been used in your district?" *"I'm not aware about that. In my experience working in the district, the system has always been like that."* DP, scale up district

The case study team observed that the DPs in scale up districts did not fully comprehend the details of the RSP process, how calculations were done at the community level, and how that process connected to their responsibilities at the district level. When the team specifically asked about the details of the RSP process, they were only able to explain the process in very general, and at times, vague terms[6]:

	Key Quotes
Incomplete understanding of RSP process by DP	*"So at the community level, what process do they use? How do they report the quantities of medicine that they have used, and that they need?"* *"It usually follows the administrative entities. So it starts at the village, and the binomes* [CHWs] *compile the needs, and then they submit it to the cell level. Once the CC has information for all the villages, he compiles the report and presents it at the meeting, then that form is sent to the pharmacist at the district level. After the health center receives the reports from the CCs they make one aggregated report that they send to the district pharmacy."* *"And what tools are used to report the medicines?"* *[long pause]* *"We can continue?"* (skips question) DP, scale up district
	"Are you familiar with the RSP? What is your role within that process?" *"Yes, in the example of products, first people in the community, they consume the products. The health center quantifies their needs. Then they send a report to the district pharmacy, and that includes how the products were used, what they need, what the stock on hand is, and because we manage many health centers we compile all of those data. After we compile data for all the health centers, we analyze it and then send a report to the higher levels—MPPD."* *"So focusing on the experience of how products are obtained by CHWs, are you aware of the procedure that they follow?"* *"The procedure for health workers to get products, well first they have tools that they fill in about how they used the last products, and that is sufficient for the*

[6] There were two district hospitals with pharmacists in one scale up district, so three district pharmacists were interviewed in the two scale up districts.

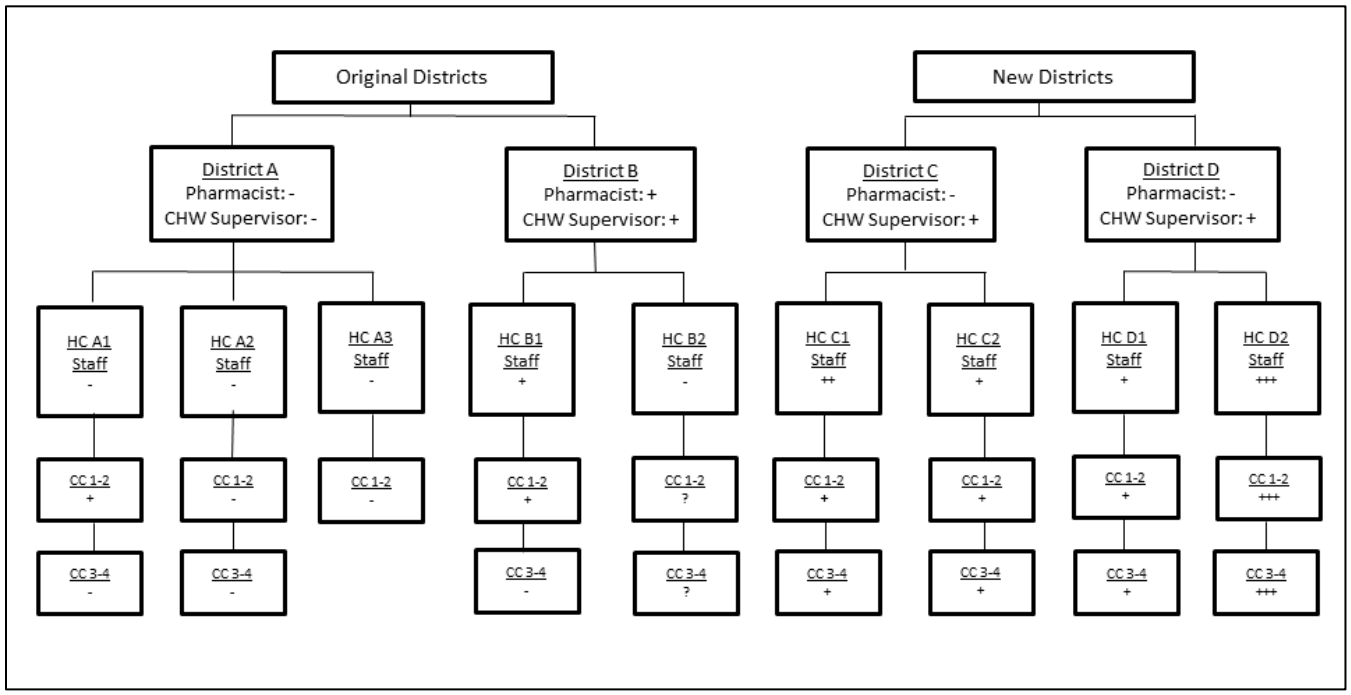
	health center to know what they need. And then the people from the health center supply what they need." *"So as you have received the training on the RSP, what kind of tool is used by the CC to quantify the needed medicines for each CHW?"* *"I don't remember the name, but I know the tools are there."* DP, scale up district

The case study data also shows a difference in perspectives on PA between the CC, HC, and district, and between the CHW Supervisor and Pharmacist at HC and district levels in both original and scale up districts. Awareness of the real situation regarding CCM PA at the community level was not consistent, and depended on whether the staff member was actually involved in the RSP process, and how involved they were, which in turn depended on their interaction with CHWs. We found that CHW Supervisors at both district and HC levels tended to be more aware of problems – they also tended to participate more regularly in QITs and therefore participate in problem solving activities. We noted that data access and visibility played a role in keeping different staff members engaged and aware; interaction with the QIT or directly with CHWs, including CCs, seemed to raise awareness by increasing opportunities to review the data to assess performance.

HC staff and CCs recognized the benefit of streamlined process of RSP for PA, but noted that this benefit is less important if products are stocked out at and cannot be provided to CHWs. When we examine our case study data district by district, and link CCs to HCs and districts, we see a disconnect from level to level in our discussions of PA among all levels of staff. Not all staff in a single supply stream had the same perceptions about the extent of stockouts or how big of a problem they were. Participants at each level gave multiple explanations for the same stockouts at levels other than their own, and typically saw other levels as the source of the problem or responsible for solving the problem (Figure 31). In the absence of or limited frequency of QIT meetings, there were few opportunities, if any, for different levels of staff to share information and harmonize their understanding of SC problems, address perceptions and misconceptions; this likely led to a greater tendency for misconceptions to linger and for blaming other levels.

Challenges associated with PA at the CHW level appear less likely to be a result of incorrect RSP practices and more likely to be associated with SC practices at higher levels or national-level PA challenges.

Figure 31: Perceptions of Product Availability



Key Quote

"Why do those [stockout] *problems persist?"*

"I think that may be because CCM products are free, people don't find interest when no benefits. No benefits, no actions. I went to the district pharmacy to ask and they will not do separate requisition."

"Is the district pharmacist the only one who does requisition?"

"Yes. He is the only one who does the requisition. If not, I would have gone to CAMERWA myself and solve the problem. One day, I went to CAMERWA for other activities and I found CCM products available while we were experiencing stockout."

"What happened when you ask CAMERWA about the lack of products?"

"They say that our pharmacist didn't request for, and at the district they say HC didn't complete RSW properly." DCHWS, scale up district

The disconnect between HCs and CCs was most pronounced in terms of providing supplies according to the RSW. As noted above, CCs often stated that they did not receive the quantities they requested, and in some instances, HCs stated why they did not provide quantities according to the RSW. Sometimes the HC stated that CCs do not need quantity requested, or that the HC does not have enough. The LIAT survey provides sufficient supporting data on OFRs to substantiate the case study finding; OFRs for all six CCM products was well below 100% (Figure 19 in RSP section), with 40-85% of CC requests being under-filled. The explanation of the stockout or under fill rate was never clear despite the fact that the case study team tried to triangulate at different levels and specifically probe on this issue after becoming aware of stockouts at the CC level.

Overall, the endline data revealed the following about PA for community products:

- Decline in PA noted at endline for all six products at CHW level,
- CHW stockouts are prolonged, primarily reflective of PA related challenges at HCs rather than issues between CHW and HC,
- Disconnects between perceptions of PA were noted between HC and district and higher levels, with districts seemingly unaware of PA challenges at HC levels, and
- Challenges with PA affect the use of RSPs – when stock levels were consistently insufficient to fill orders, there was a tendency to stop using RSPs.

Scaling Up RSPs and QITs

In the short period between midline and endline, there have been some notable accomplishments in scaling up the community SC practices. In particular, CHD has successfully advocated with partners to support scale up of this package, resulting in the following progress:

- Training of trainers have been completed and a total of 20 master trainers have received training on integrated training; of these, ten have received additional training on the QIT addendum
- Integrated training has been completed in 14 out of 30 districts while QIT addendum training has been completed in 12 out of the 14 districts that have received integrated training
- There is UNFPA funding available for a further two or three districts on integrated training
- As part of the intervention package, three indicators are in the process of being added to the PBF system, all of which will reinforce routine implementation of elements of the RSP+QIT package. These include:
    - Stock card accuracy which is the foundation of accurate data for community resupply procedures. If CHWs do not keep their stock cards up to date or report inaccurate stock data then bad/inaccurate data travels up the system and decisions are made at every level based on that inaccurate data, which undermines the whole system. The indicator is: *The proportion of CHWs with stock cards for CCM products where physical inventory matches stock card balance for all products on the day of visit.* This indicator will be collected through SIS Com.
    - CC supervision visits to CHWs using the integrated supervision checklist forms the foundation for collection of data to be used for effective QITs. Without updated and complete data, QITs cannot determine the range and frequency of problems or prioritize and plan effectively to address them. This indicator will be collected through SIS Com.
    - QIT meeting indicator will track frequency of QIT meetings at HCs by districts and enable targeted follow up, supervision and support to those HCs struggling to conduct meetings regularly. This indicator will be collected through HMIS.

Findings on Institutionalization of RSP and QIT

For the purposes of this evaluation, we considered that RSP or QIT was institutionalized or on its way to becoming so when it was incorporated into routine activities or seen as part of routine work and responsibilities and not an addition. We consider that if RSP or QIT becomes institutionalized, the likelihood of it being sustained over time is greater.

In districts that have received the training, RSP has become institutionalized as the accepted, standard approach by which HCs should resupply CHWs through CCs. In addition, an indicator for stock card accuracy was recently included as part of cPBF and is pending approval, which should further support routine use of this part of the RSP. This was done based on lessons learned from the midline evaluation; although this indicator is not part of the paid incentive program yet, we did see that **stock card use and accuracy was sustained from midline levels**. Use of the RSW was however less consistent, which was not surprising given the interruptions and recent start-up of QITs, intended to reinforce use. But despite these inconsistencies, we found that RSP use continued even when QITs were interrupted in the original districts (after 12 months of QITs being held). The recent introduction of CCM SC management as part of integrated training and inclusion of the stock card accuracy indicator in cPBF will likely contribute, and may already have contributed, to further progress in institutionalizing RSP at CHW, CC, and HC levels.

For QITs, progress on institutionalization faces different challenges. **Overall, there is little evidence from the endline evaluation that QITs have been institutionalized.** Given that midline findings demonstrated that QITs made a significant difference in RSP effectiveness[7] and improved PA, priority should be given to supporting the effective initiation and continuation of QIT as part of scale up, with an eye to institutionalization.

Case study findings indicated near universal recognition of a wide variety of benefits of QITs by all levels of staff, along with a near universal recognition of the workload barriers, especially for CCs, to having regular QITs. Some respondents identified the QITs as being dependent on routine supervision to be effective, and that routine supervision was difficult for CCs to complete, and supervision and participation by CCs in QIT meetings are additional time demands. Others identified that having both a monthly HC meeting and a monthly QIT meeting was too difficult; however, midline results, and evidence from QCs implemented successfully in other settings, strongly suggest that benefits can be seen and sustained if meetings are held monthly for at least a year. This is supported by evidence that RSP practices were maintained in the original districts, where QIT meetings had been held monthly for one year until midlines, but then lapsed in the period between midline and endline.

The most positive sign of and opportunity for institutionalization of both RSP and QIT is that they have been incorporated into CCM integrated training and supervision. However, while the integrated training incorporates RSPs and refers to QITs as an important component of CCs' routine activities and responsibilities, the integrated training was not designed to provide enough knowledge on QIT to HC staff, without follow up by District Coaches to initiate meetings and provide ongoing support.

[7] SC4CCM Project Team. 2013. *Rwanda Community Health Supply Chain Midline Evaluation Report.* Arlington, Va.: SC4CCM. http://sc4ccm.jsi.com/files/2014/02/Rwanda-Midline-Report-FINAL.pdf

Key Quotes

"After stopping the QIT meetings, the CCs continued the supervision of CHWs as usual, and they requisitioned as they had been taught. But as it concerned their part in the QIT meeting, they were discouraged, for them the allowances that were given were a motivation. Also the other activities that they do in the community, for example with family planning, those duties were increased by the Ministry of Health, so those activities required more time to complete, and were also put in the supervision checklist." HC CHW Supervisor, original district

When asked about the gap in the QIT meetings, a DCHWS in an original district responded that the interruption of meetings was due to a number of factors. The health center had invited the CCs to come for the meeting, but CCs were reluctant when allowances were no longer offered. But she noted they did continue with certain activities, most importantly the health center staff understood the importance of conducting home visits with CHWs. The CHW Supervisor was asked why the meetings started to be conducted once more in 2014, she responded:

"The main factor for the CCs to attend the meetings have been the integrated training. Even before the integrated training it was requested that the CCs come to the meetings, but after the integrated training the CCs began to improve their motivation to attend. The CCs began to view the meetings as something they were expected to do and something they had been trained on."

When asked if the she thinks the QIT meetings will continue, she responded that she thinks that is what they have decided.

Discussion: Enabling and Sustaining RSPs and QITs

The SC4CCM project was implemented and evaluated as a learning project. The following sections present the learning on RSPs, QITs, and PA improvements based on the endline evaluation that can be used during further scale up and sustaining the benefits from RSPs and QITs.

Considerations for Scaling Up, Institutionalizing and Sustaining RSPs and QITs

The endline evaluation shows that we have learned how to train well on RSPs; in addition, the case study data suggest that imparting the knowledge and skills for using RSPs is relatively straightforward, and was achieved well in the scale up districts as part of the integrated training. This is a positive finding for scale up, and confirms that the current integrated approach to training on RSPs is a good way forward with scale up.

The issues of staff turnover, and ensuring knowledge and skills transfer for RSPs, as well as ensuring constant presence of RSPs knowledge and skills during the absence of key staff, is something that needs to be addressed more directly to sustain consistent and correct use of RSP, as part of scale up. A positive finding from the endline case study is that many HC staff who had received training on RSPs found it easy to train new staff on the RSP tools and processes.

In addition, plans for supplying and resupplying the most up-to-date RSP and QIT tools needs to be an explicit part of scale up. This would include identifying the budget to fund printing and distribution, modes of distribution, and a system for users to request more tools. This has not yet been achieved; among the 16 CC pairs observed in the case study, at least four pairs were using an outdated version of the magic calculator and many HCs did not have the latest QIT tools. There also needs to be a common understanding of who is responsible for providing tools, so that those who need them know where to make requests.

The SC4CCM RSP intervention was designed to make the requests and resupply quantities for CCM products standard and rational (based on the previous month's consumption). For RSPs to have an effect on CCM PA at the community level, the tools and processes need to be correctly and consistently followed, month after month. The intervention design also addressed the continuous support that would be needed for correct and consistent use of the RSPs by including the QIT, the mechanism for multiple levels to use product and management data to solve SC problems at the community level. The endline evaluation clearly confirmed that RSP knowledge and skills alone are not enough to sustain correct and consistent use of RSPs, even if users recognize multiple, wide-ranging benefits – continuous support and communication, facilitated and provided through the QITs, was necessary.

An important motivator for consistent use is that CCs and HCs feel able to communicate and rely on support from district levels to resolve issues of PA unrelated to execution of procedures. The case study data showed clearly the important role that QITs play in ensuring that both of these critical resupply processes take place so that SC activities are undertaken consistently and correctly regardless of changes in context or supply levels. It is a well-known SC phenomenon that frequent or persistent stockouts can negatively affect correct and consistent use of SC procedures, including, in this case, RSWs. If users know that the data they send is unrelated to resupply, they will stop sending the data. This was observed in the case study results as well as from LIAT data, which supported that CC requests were under-filled in high proportions, particularly for some products. Thus, because of product shortages and stockouts, CCs and HC staff did not always follow the recommended RSP processes. The clearest reason as to why correct amounts are not provided for resupply as intended by the RSP was stated by a variety of case

study respondents at all levels in both original and scale up districts: inadequate stocks at levels higher than the community – at HC, district, or central level.

The QIT mechanism was intended to mitigate imbalances in supply by improving communication and transparency between levels responsible for ensuring product flow and encouraging continued and consistent use of procedures while supply issues were being resolved. From a national PA perspective, there were no significant changes in supply levels in country during the baseline to midline period and the midline to endline period. So it is likely that the consistent QITs that were held leading up to midline did play a role in ensuring consistent and continued use of RSPs, by facilitating communication, transparency and a sense of accountability when supply issues came up. However, case study findings suggest that in the absence of regular QIT meetings, while RSPs continue to be seen as the primary mechanism for resupply, the tools and processes are followed less consistently and correctly, which in turn likely affects overall PA. Furthermore, District Coaches who played an important role in the period leading up to midline were notably more absent in the pre-endline period; the District Coaches play an important role in identifying and helping to resolve supply challenges at the HC and district levels so their absence, even when meetings did take place, may have further contributed to PA challenges at endline.

The case study showed that a variety of benefits were realized through the QITs in both original and scale up districts, even without district level attendance, regardless of how long or how continuously the QITs had been held, and despite the uncertainty about the content and quality of QITs. This was especially true for the team-building types of benefits that respondents identified. This is a positive finding for scale up, and we can feel confident that QITs bring benefits that not only relate to improving CCM product supply, but that build teams to work together, and support greater awareness of and engagement with community level health service delivery.

However, the data also show that QITs were a difficult activity to implement and sustain. Initiating QITs required focused motivation to and from the district and HC levels, and the case study data showed that QIT addendum training was not sufficient for ensuring District Coach attendance at QIT meetings, not even the first meeting held by a HC to cascade knowledge from the addendum training. Getting District Coach engagement in the first QIT meeting in particular is critical to ensuring the quality of the QIT meeting, which is important for ensuring the purpose of QITs are understood and the process followed. HC staff get partial QIT knowledge through the integrated training, with the expectation that District Coaches, who receive more detailed training, will organize a kick off meeting at each HC to explain how to hold a meeting and support them in QIT activities; if that expectation is not being met, then how to provide knowledge, and to whom, may need to be revisited for effective scale up.

The current model relies on three District Coaches, the DCHWS, the DP, and the District Data Manager. Our case study showed though that in reality the DCHWS had the greatest level of involvement with QITs, especially in the scale up districts. But the original districts benefitted from previous involvement of DPs, as they could then contact them outside of QITs to understand and help resolve higher level PA issues. This may mean that there needs to be greater understanding of the relative workloads, especially related to the community, and a mechanism whereby the DCHWS is able to lead the QIT process but engage the DP, as needed. The DP play a key role in addressing or resolving supply issues so their engagement is a critical prerequisite for ensuring QITs are effective.

The enabling factors and barriers to QIT start-up were similar, regardless if QITs had been conducted regularly before. General workload was identified as a barrier by staff at all levels, and HC and district staff recognized that it was difficult to ask CC volunteers to routinely participate in QITs, which depended on regular supervision, which in turn was difficult for CC volunteers to complete according to plan.

Institutionalizing and sustaining QITs depended on participants not only recognizing the benefits, but experiencing these benefits regularly. Concerted follow up is needed to ensure QITs are established and that they happen routinely for at least one year. QITs also require follow up and supervision to ensure

sufficient quality and clarity on the optimal process that will bring maximum benefits. For example, the DP should be regularly checking that the HC knows how QITs are supposed to be implemented so that good QIT habits are reinforced, and bad habits rapidly identified and fixed.

As part of scale up, substantial consideration needs to be given to how to ensure district engagement in QIT early on, as well as how to encourage their regular participation in the QIT meetings so that QIT meetings can happen regularly for at least 9-12 months, which appears to be a tipping point for routinizing their effects on RSPs and sustaining the elements of the process, as observed in the original districts who continued to use RPSs well, despite infrequent QIT meetings. This may mean there is an opportunity to determine if some of the techniques and content of the QIT can be adapted or incorporated into the HC review meeting, after a year of dedicated meetings to establish teams, basic concepts, relationships, and use of data for problem solving.

The plan to include a QIT meeting indicator as part of cPBF presents an opportunity to motivate staff at all levels to focus on QIT and promote institutionalization. It will provide higher levels a way to monitor meeting frequency and support district and HCs that are not meeting regularly. Data on this indicator would be collected and tracked at each HC and then fed into HMIS to monitor frequency of meetings. Motivating monthly QIT meeting frequency will be especially important in the first 12 months of implementing RSP; however the cPBF indicator will not ensure quality, or district engagement, since most QITs we observed happen without district staff presence. On its own the indicator may not be sufficient for QITs to effectively take root and achieve their objectives across all districts, since it is not designed to motivate follow up on the quality and clarity of the QIT process. Thus, another means of providing this follow-up is critical, and does not need to wait for the indicator to become operational. The quality and effectiveness of the meetings would need to be monitored by the district staff through a separate check list or as an add-on to a check list that district staff use for HC supervision.

Most important is to find some way to offset the work burden of routine integrated supervision for CCs, who work as volunteers, and are keenly aware of how time used for health-related work takes away from time that could be spent on IGAs. Lessons from the original districts showed that providing allowances for supervision was important, and became a barrier once they were withdrawn that was difficult to overcome. In scale up districts, there was already indication after just one QIT meeting that CCs felt the extra burden and may begin to chafe at not receiving compensation. QITs are dependent on regular and complete supervision data, and supervision clearly brought other benefits, including better awareness of the community-level situation at all levels. It is worthwhile to consider whether some sort of recognition or (monetary or non-monetary) compensation can be provided for routine supervision activities, taking into account the size of the cell that the CC is responsible for. Finding sustainable ways to ensure CCs prioritize and are able to regularly complete integrated supervision will not only be important for CCM product supply, but for strengthening community level health activities of the CHWs.

The midline evaluation results showed that in the Rwandan context of high numbers of volunteer CHWs, QIT are effective way to reinforce RSP skills at a low level of the system and to ensure a strong SC, evidenced by the added improvement in PA in the QC districts. The endline evaluation confirmed the importance of intensive inputs and allowances in initiating and sustaining the QIT over the course of one year, by showing what happens when these inputs are removed. The learning from this process shows that QITs are essential for realizing PA gains, but that constant supervision and follow-up is needed to ensure QIT quality, so that benefits are consistently realized, and motivation to participate in and continue QITs overcomes any workload barriers that may initially be felt.

Considerations for Improving PA as Part of Scale Up

Improvements in PA were demonstrated in results of the RSP+QC intervention at midline; implementation lessons and considerations for scale up were then incorporated to adjust the intervention which was then evaluated at endline. LIAT data was not collected from the scale up districts, as it was

unrealistic to expect to see changes in PA after a short (three to six month) implementation period. LIAT survey data from the original districts show that PA, using several different indicators, declined to near baseline levels. There is sufficient evidence of stock imbalances, reported stockouts, and less than sufficient OFRs to surmise that PA has resurfaced as a problem.

However, the case study data from scale up districts showed that most users at CC, HC, and district levels perceived that the RSP and QIT intervention had improved PA. Some of this perception can be explained by the improved data visibility that the RSP provides; there is greater confidence in the requested quantities, a feeling of predictability and order around resupply, and data available that permits re-distribution of CCM products among CHWs. Although that was not the original intention of RSP+QIT implementation, this may allow stockout problems at the community level to be mitigated, until they can be prevented. In the original districts, the fact that RSP facilitated redistribution at community level, and that this helped with stockouts was also recognized. HCs and CCs in these original districts were more likely to appreciate the streamlined processes of RSP that should lead to increased PA, but had experienced little sustained change in CCM PA over time. CCs and HCs in both original and scale up districts recognized that the organizational and data visibility benefits of RSPs were not so beneficial if products were stocked out and CHWs could not provide them to community members.

A particular difficulty was that we were unable to pinpoint the sources of the persistent stockouts. The most likely sources that need further targeted exploration include:

- The consistent under-filling of CC supply requests, for multiple reasons including low or no stocks at the HC in both original and scale up districts,
- Misunderstanding of the purpose of RSP tools, despite correct knowledge of how to complete the RSW,
- The perception that the HC incentive (indicator) encourages HCs to hold onto stock even if they can't use the CCM product at that level, and
- The disconnect between resupply data used at HC, and that used by districts – is RSP data used for re-ordering by districts?

The barriers to achieving better CCM PA appear to be data inconsistency which does not allow for easy diagnosis or problem-solving above the HC level, and the absence of a clear structured mechanism, such as regular QIT meetings, that would enable multiple levels to share data, pinpoint the source of the problem, and make a plan to address it. The data simply are not visible enough above the HC level and the lack of district participation in QIT meetings reduces district awareness of this as a problem to be addressed. An opportunity for achieving improved PA would be to include linking the RSP with the electronic logistical management information system (eLMIS) during scale up, which would greatly increase data visibility to districts on the CCM PA situation at the community level, and to include a mechanism such as QITs to ensure that the visible data is used for SC performance improvement.

The Supply Chain for Malaria Products: Considerations for RSPs and PA

An important finding from the endline is that although RSPs were designed to address all six commodities managed by CHWs, RSPs are not being used for resupply of malaria products down to district (and very likely HC) levels. As described previously, malaria commodities are distributed to districts based on reported cases, reflecting endemicity of the disease. Nationally, decisions are made to distribute very few quantities to low transmission areas and prioritize products for high endemic zones, to maximize resources. From a resource perspective, this is an effective and efficient way to ensure that those areas with the greatest burden receive the greatest proportion of products. However, from a SC perspective, it suggests the need for a revised strategy for SC management of malaria commodities across the country. In low transmission zones, where one might see 20 cases in the entire district, for example, it certainly does not make sense to distribute one blister of each dosage of ACT to all of the CHWs in that

district since that might require more than 300 treatments if one were to follow the SC procedures, depending on the number of CHWs in the district. However, nor does it make sense to tell CHWs to manage malaria products in that scenario – since in doing so the MOH creates an expectation that they must follow RSPs. If standard SC procedures are not used to supply the district, then the district certainly will not have enough products for all CHWs and this will lead to a chronic shortage or stockout of malaria products among CHWs, who will stop using RSPs – perhaps for all products. Instead, the MOH should consider a different treatment approach for low transmission areas – perhaps referral to HCs – therefore reducing their inventory needs for CHWs and preventing any undermining of the RSPs.

Considerations for Improving Data Visibility and Sustaining Improvements in PA

Sustaining any PA improvements from implementing RSPs at the HC and CC levels seems to be strongly linked to two higher level issues: 1) central and district level engagement and monitoring; 2) district level reordering based on community consumption, i.e., the RSPs. Integrating the RSP data into the eLMIS would greatly facilitate the first issue being resolved, as will the full operationalization of the recently created Logistics Management Office (LMO) at the MOH.

The eLMIS training currently does include an orientation to the RSP and how it works, so the connection has been made. The problem is that this training is being provided even in districts where the RSPs are not yet being used. The risk of training and implementing the eLMIS without the RSPs is that the eLMIS will produce inaccurate data, as it will not incorporate the standardized calculations that the RSP provides for supply stocks at the community level. With such inaccurate data generated by the eLMIS when RSP is absent, there is high likelihood that PA at the community level will not improve. The RSP should be in place for the eLMIS to work effectively, and for the expected SC performance to be achieved. Finding ways to more closely link RSP with eLMIS – through integrated training, more coordinated scale up, and considering the plans for the SMS reporting system – will greatly increase the likelihood and the trajectory of PA improvements at community level.

The expectation that the LMO will coordinate the logistics aspects of all the programs will add a cadre of staff whose responsibility it is to keep track of SC performance. Currently, the eLMIS is expected to provide the data on each program's products, which the LMO Officers will monitor; however, there is also an initiative to introduce an SMS-based system for SC reporting from the HCs which link to the community level, as the eLMIS will not provide data below the HC/cell level that can be monitored. The SMS system should link with the RSWs that HCs use to resupply the CCs, to ensure a continuous stream of data on products.

Data monitoring is critical, but likely not sufficient to improve PA at the community level without systematic follow-up. The LMO anticipates that each program's Logistics Officer will work with HCs and encourage them to follow-up with CHWs. However, with this arrangement, each program's Logistics Officer will have to maintain communication with all HCs in the country; the volume of follow-up for CCM PA at the community level is already beyond what current CHD staffing can sustain without SC4CCM project inputs. While the eLMIS and SMS systems will automate the data and make it immediately available, the process of using data is just as important as the data being available. Somehow, the LMO also needs to consider how to monitor whether critical data use processes are occurring: whether the District Coaches are doing the QIT coaching; whether the HCs are holding QIT meetings, and whether the CCs are submitting the RSWs regularly. The endline evaluation confirmed that all of these data processes are mostly facilitated by the QITs. While the inclusion of an indicator of QIT frequency in the cPBF will help motivate HCs to hold QITs, the indicator will not give information on QIT quality, including on whether District Coaches are engaged or if CCs are able to regularly conduct supervision and current data is being used to prioritize problems, problem solve and make a plan for improvement. If the LMO leads the monitoring of the logistics for all programs, then it must also monitor the quality and data use functions of the QITs. This will allow integrated monitoring of logistics issues all the way down to the community.

There remains much work to be done on how best to engage districts in community-level health service provision and management. The SC4CCM project focused its work at the CC, CHW and community levels, but recognized the importance of district level engagement for improving community level PA. The QITs were designed to create a mechanism through which the district engaged in community level RSP. What the project learned from both the pilot and the first stage scale up is that this method of engaging the district is hard to do. District engagement is a more generally recognized challenge; currently, there are multiple initiatives to engage the district level with the community health activities, several of which focus on optimizing the use of the District Steering Committees, which already are supposed to meet regularly. One of these is to use indicators in the cPBF to encourage the District Steering Committee and the Health Sector Steering Committee to be mutually accountable, not just for facilities like the HC and district hospitals, but also for the community. Another is to explore whether the DP, who has the mandate to serve as District QIT Coach, can be added to the District Steering Committee.

Expected engagement of district staff, including the DP, with RSP and QIT should likely vary according to their specific roles and responsibilities. For certain SC issues, the DP may be the more appropriate, whereas for other issues, the DCHWS may be the best. Adapting the QIT for scale up implementation that will sustain PA achievements requires thinking creatively about how to engage different district staff most appropriately and effectively, and this should be done with a long-term view to instilling a sense of accountability for the community level in a variety of district health staff.

Our case study data confirm that there are negative feedback loops between lack of improvement in PA and consistent and routine use of the RSPs, which in turn undermines the potential for improved PA. This loop means that unless the conditions for improved PA at the levels from which HCs get their resupply are good, and unless HCs follow the RSWs when providing resupply quantities to CCs, achieving and sustaining improvements in CCM PA at the community level are less likely to be realized. Also confirmed is that the QIT can be an important mechanism to mitigate against supply challenges. There are multiple indications that the conditions for achieving and sustaining improved CCM PA at the community level are likely to improve: the eLMIS scale up, the planned SMS system for product resupply for HCs, the full operationalization of the LMO that began in July 2014, and the ways in which the cPBF is being used to motivate performance on SC, QITs, and district engagement, are all positive signs that scale up of the RSP+QIT will be supported by the systems that will enable positive PA gains at the community level to be achieved and sustained.

Gaps and Anticipated Risks for RSPs and QITs

While progress has been made in moving towards achieving a fully scaled, national implementation of community SC practices, the following are notable gaps that still require attention and resources:

- Funding to complete integrated training in the remaining 15-16 districts and QIT addendum training in 18 districts to reach all 30 districts in Rwanda.
- Resources and a plan for printing and distributing tools for RSPs and QITs annually.
- A monitoring and supervision plan for CHD and LMO to follow up and provide support, guidance and oversight on implementation of RSPs and QITs as they are scaling and routinely afterwards to ensure quality, effectiveness and progress towards institutionalization.

Other broader anticipated risks that require attention include ensuring that:

- Challenges with national levels of PA, distribution of appropriate quantities of supplies to HC levels, or disconnects in information about stock levels at different levels do not undermine RSP use and QITs.

- Coordination across SC and programmatic units such as is envisaged by LMO is operationalized effectively to ensure leadership and stewardship of RSPs and QITs as scale is achieved and practices institutionalized. This is especially critical for QITs which will need district leadership for follow up, prioritization and coordination, and in turn will require the same by central level.
- Maintaining momentum for scaling up RSPs and QITs to all districts in the country by ensuring funding for scale up of training and tools is mobilized.

Recommendations for Scaling Up and Sustaining RSP for CCM

Based on the results of the endline evaluation and discussions of the results with relevant stakeholders from the dissemination workshop (participant lists are included in Appendix 7), the following recommendations were jointly developed by SC4CCM and stakeholders in four key areas:

1. Implementation of RSPs and QITs to all the remaining districts in Rwanda
2. Operationalization of PBF indicators to support RSPs and QITs
3. Institutionalization of RSPs and QITs at all levels of the system
4. Ensuring consistent PA for community health products

Implementation of RSPs and QITs to All the Remaining Districts in Rwanda

Include QIT addendum training with integrated training for CHWs

Although it was initially proposed to conduct the QIT addendum training for HC staff separately, evidence from the SC4CCM endline leads the project to recommend **adjusting the QIT scale up plan to incorporate the QIT addendum training within the training for CHWs, so that district staff are trained alongside HC staff**. This model would prevent a missed opportunity for team-building that is essential for forming effective QITs, and prevent delays in initiation of QIT meetings. Delays have occurred when HC staff wait for the district to conduct a standalone QIT addendum training before starting to hold QIT meetings, posing a major risk to a successful launch because of lost capacity over time. Incorporation of the QIT addendum into the integrated training will require discussions at CHD/LMO level with relevant stakeholders to integrate the training material, review training plan and budget.

Rapidly complete roll out of integrated training with RSP and QIT components

The integrated training approach that includes the RSPs and QITs has been proven effective in producing the same levels of competency in the newly trained districts. For the benefits of the RSPs and QITs (i.e. improved PA, SC performance, as well as communication, collaboration and coordination) to continue to be realized and sustained countrywide, **the current integrated training approach that includes RSP and QIT tools needs to be rapidly scaled up to all the remaining districts**. Measures to mitigate the risk of anticipated staff turnover also need to be put in place to ensure transfer, continuity and reinforcement of knowledge and skills related to RSPs and QITs, especially for critical roles such as those of HCPMs and District Coaches. This requires CHD/ MOH to **develop an orientation plan or enhance an existing refresher training plan to include a module on RSPs and QITs**.

Systematic follow-up after QIT addendum training

Once CHWs and HC staff have received the initial training on RSPs and QIT addendum training, it is imperative that district staff provide systematic follow-up to the QITs within their districts to ensure that; 1) QIT meetings are initiated and run effectively; 2) HCs plan for CC collection of data and use at the QIT meetings; 3) data collected are analyzed by HC Data Managers; and 4) data are used on a regular basis for performance monitoring and SC improvements. **District staff must also be encouraged or incentivized to play their role as coaches for QITs** to ensure that escalated problems are resolved, linkages between the various (district-HC-community) levels are strong, and the quality and effectiveness of the QIT meetings is enhanced and maintained. Districts will therefore need to consider how best to

distribute the responsibility for QIT participation and follow-up with HCs among the District Coaches based on their roles and responsibilities. The team of QIT Coaches should deliberately **include the District Pharmacists as a SC specialist to help resolve higher level PA issues and provide regular updates on PA status**. DP and DCHWS supervision and coaching roles will need to be carefully mapped out and closely connected so that all HCs are covered on a regular basis, not just those that are convenient to reach. District Coach roles should be communicated clearly to relevant staff at HCs and CCs, so that there is collective accountability, and HC staff are clear on which coach will provide what kinds of support for RSP, QIT and SC issues.

Operationalization of PBF Indicators to Support RSPs and QITs

Fast track operationalization of community SC indicators in cPBF and PBF

Following the endorsement of the scale up package for the community SC that included RSPs, QIT and a SC indicator on stock card accuracy as part of the cPBF, CHD in collaboration with the extended team initiated the process to include the cPBF indicator and two additional PBF indicators related to QIT meetings and collection of supervision data by CCs. **The process for operationalizing these three indicators is ongoing, but needs to be fast-tracked and finalized.** These indicators provide effective tools to motivate staff at all levels to work towards; accurate reporting of CHW stock levels, routine and consistent supportive supervision of CHWs by CC, collection of data useful for supporting QITs and regularity and frequency of holding QIT meetings. The adoption of the three indicators is urgent because they are expected to accelerate the uptake of correct and effective use of RSPs and QITs.

Institutionalization of RSPs and QITs at All Levels of the System

Our findings show that although RSPs have been institutionalized as part of the standard reporting, request and resupply procedures for the community, QITs are still facing some challenges. District and central level support is important for improving uptake, progressing towards institutionalization and sustaining of QITs.

Ensure QIT meetings are happening regularly

QIT meetings were incorporated as part of the scale up package for RSPs because they were recognized as an important and critical component in reinforcing good RSP practices, building trust and in improving relationships between levels and improving SC performance. However, these meetings have not yet been held consistently as expected, and it is recommended that district and central level support be provided through monitoring and follow up to ensure QIT meetings are held on a monthly basis at the HCs. Although the PBF indicator on frequency of QIT meetings is expected to encourage HC to hold them regularly, district coaching is still crucial in maintaining quality and effectiveness of the meetings.

Include QITs in annual district action plans

District coaches are an important link between central level and HC level and are critical to ensuring that QITs are rolled out effectively and achieve their intended purpose in strengthening RSPs and promoting local problem solving. To promote institutionalization of QITs, the District Coaches need to advocate for inclusion/mainstreaming of the QIT coaching and supervision visits into the annual District Plans to ensure that they are budgeted for, conducted and monitored as part of the standard business practices/activities of the district rather than standalone activities. District Health Management Team (DHMT) members whose functions include monitoring and evaluation of the annual district plans also need to be sensitized and oriented on the QIT process for them to effectively follow up and evaluate the status of QITs in their districts as they are rolled out.

Establish clear central level leadership/support

Central level (CHD/MOH) leadership and support is important to ensuring the RSP+QIT approach is fully implemented and sustained. To kick start this process there will be need to formalize roles for central and district support of RSP+QIT implementation under the new MOH/Rwanda Biomedical Center structure. The MOH also needs to create a mechanism to follow up with all scale up districts to prevent delayed initiation of QITs (rolling out QIT addendum to HCs) and to increase district level engagement in QITs. CHD will need to develop a performance monitoring plan to use for follow up with districts to identify and support those that are having challenges initiating or sustaining QIT meetings. As part of the performance monitoring, central level needs to encourage regular participation of District Coaches in the QIT meetings so that QIT meetings can happen regularly and consistently for at least 9-12 months as evidence has shown that benefits are more likely to be sustained when QITs are held for at least one year.

Plan and budget for replenishing RSP and QIT tools

For QITs and RSPs to function effectively, continuous availability of the required tools is critical. A budget for supplying and resupplying the most up-to-date RSP and QIT tools needs to be factored in as an explicit part of the plan for scale up and sustainability. MOH therefore needs to have an **annual budget item/line that include printing and distribution of these tools** as needed for replacement in original districts or in newly trained districts. Funds should be set aside for this activity and if gaps exist, partner support sought to ensure that the tools are always available. The tools include:

- RSP tools: *Magic Calculator, RSW and Job Aid*
- QIT tools: *Integrated Supervision Checklist, Tally Sheet and Combined Data Summary Table and Action Plan*

Integrate RSP data into eLMIS

The eLMIS has been designed and deployed as a logistics reporting and resupply system to capture logistics data and improve visibility of lower level data to higher levels of the system – HC, districts and central level staff all have access to this system. HC staff are being sensitized on RSPs as part of the eLMIS training, and trained to capture specific community level data in the system to support resupply. Linking the use of data from the community RSPs with the eLMIS at the district level will provide a continuous chain of information on CCM products all the way down to the community level, increasing data visibility and reducing disconnects related to PA at various levels of the SC while providing critical data/information that can be used during QIT meetings for problem solving and reinforcement of correct RSP practices. It is recommended that this community level data be used by central and district level staff to provide targeted routine supervision to cells, support QIT meetings and also identify sources/causes of community PA issues and provide an avenue for resolving them.

Review and revise RSPs regularly to meet the needs of the community health supply chain

The requirements needed to sustain RSPs have been identified and documented in the community supply chain strategic plan. The plan identifies the organization where RSPs would be placed as LMO, with some shared responsibilities with CHD. This organization would provide leadership and direction on things such as developing a clear protocol for regularly reviewing and making changes to the RSPs including the list of community-level products to be included on the magic calculator and adjustment of quantities for resupply, tool review and budget for tool replenishment.

The current tools and processes for RSPs as designed are all manual and there are considerations and ongoing discussions for developing an mHealth system for reporting and resupply for CHWs. This will

enable greater data visibility and greater potential for data to be made more useful, tailored to different levels and individuals using possibly the existing RapidSMS and DHIS2 platforms as the starting point.

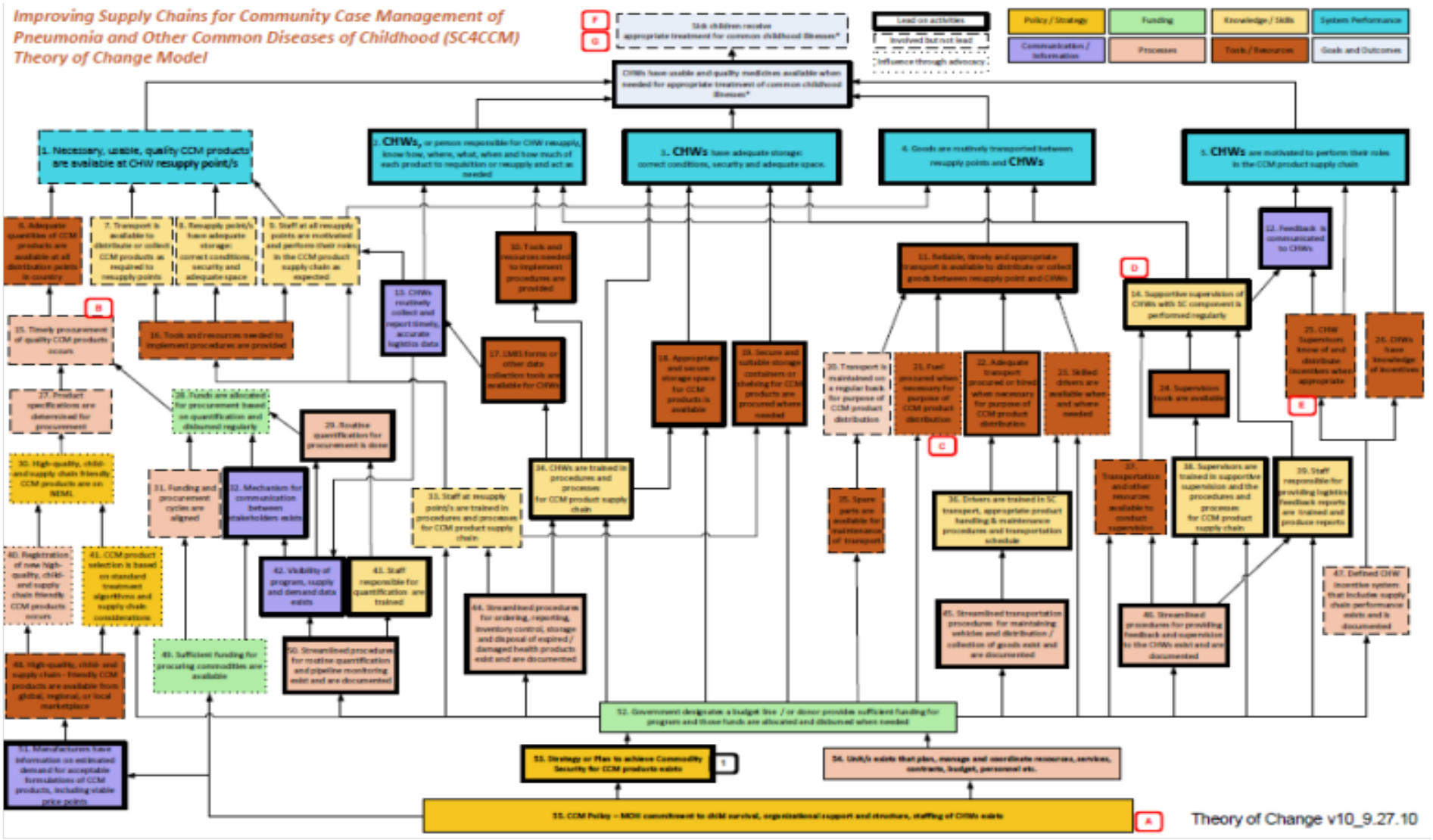
Ensuring Consistent Product Availability for Community Health Products

Findings from the evaluation show that lack of consistent availability of community health products along the SC can undermine the benefits provided by the RSPs and demotivate the CHWs. Improvements in data visibility for informed decision making through eLMIS, strengthened linkages for communication through QITs and resupply that is based on demand using the RSPs at each level would help to alleviate and reduce the stock imbalances and disconnects in resupply system.

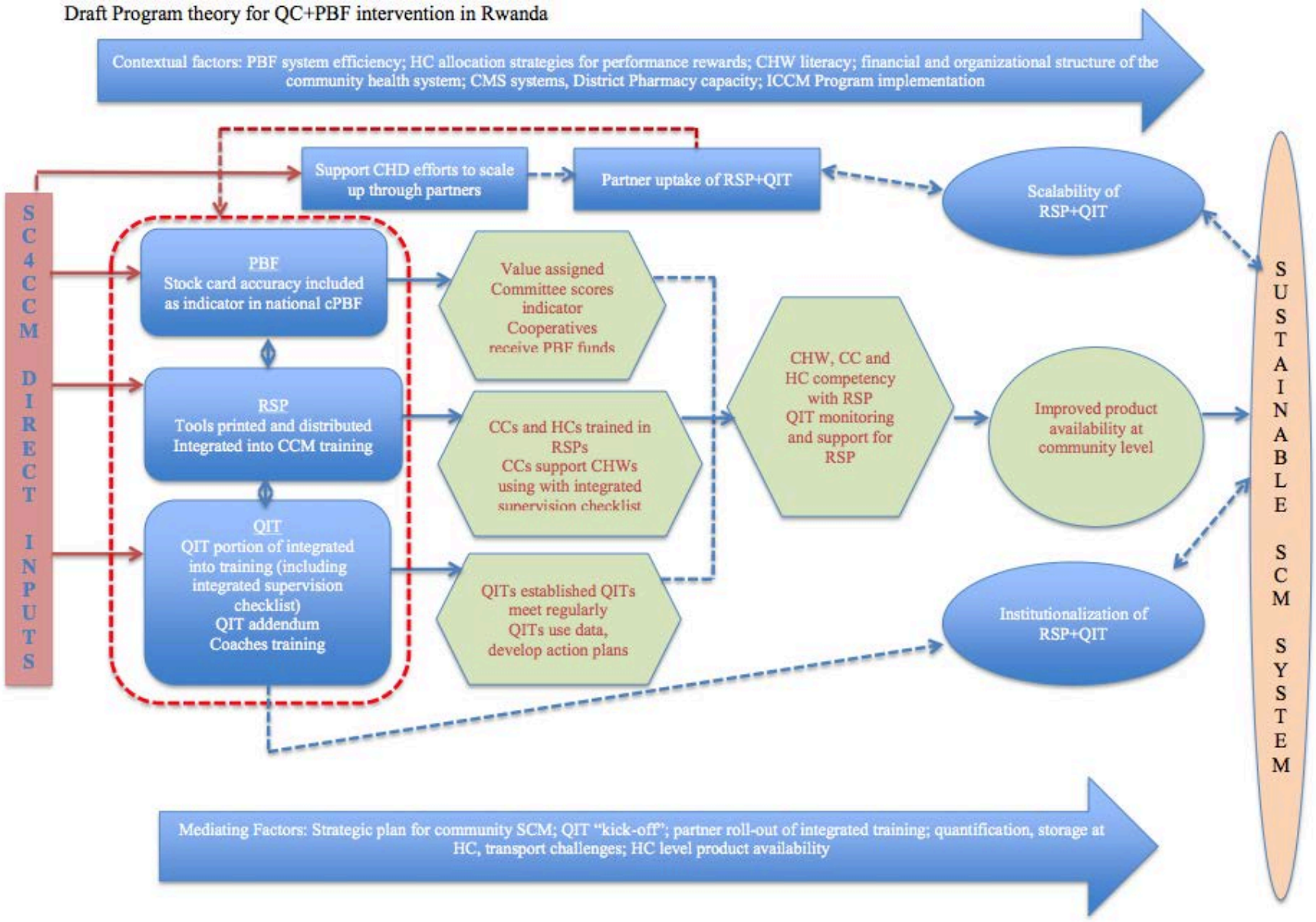
Closing Statements

Over the years that the SC4CCM project has been working in Rwanda, the CCM program has been recognized for accomplishing reductions in Rwanda's under-five mortality and morbidity rates. The continued success of this program will require that a strong and robust SC is in place to ensure that the lifesaving medicines reach the community. The combined RSP and QIT approach has proven to be successful in creating a SC where procedures have led to clarity and standardization in the community level resupply process, data is more visible and used, and where staff are motivated to take responsibility and work together to improve the performance of the SC. The results have shown that there is a willingness to share and ration supply among CHWs which can be attributed to the increased attention to PA resulting from implementation of RSPs and QITs and the increased sense of trust, collaboration and coordination that these teams have fostered. However ensuring the whole country experiences the benefits will mean rapidly completing scale up of RSPs and QITs. Furthermore, ensuring that RSPs continue to be followed correctly and QITs are sustained will require commitment and ongoing support from stakeholders at all level: implementing partners, MOH policy and the operational levels. Teams must be encouraged to meet, monitor and take actions to improve their performance and this will rely on strong and consistent district engagement as well as follow up from CHD and LMO. RSPs and QITs will require ongoing support technically and financially so that they adapt to changes in the environment such as the eLMIS while continuing to support and meet the needs of the SC. Most importantly, efforts will be required to ensure that products are available at all levels of the system to meet the needs of the community and that products reach that lower level so that CHWs can continue to do their important work of treating and managing sick children in the community.

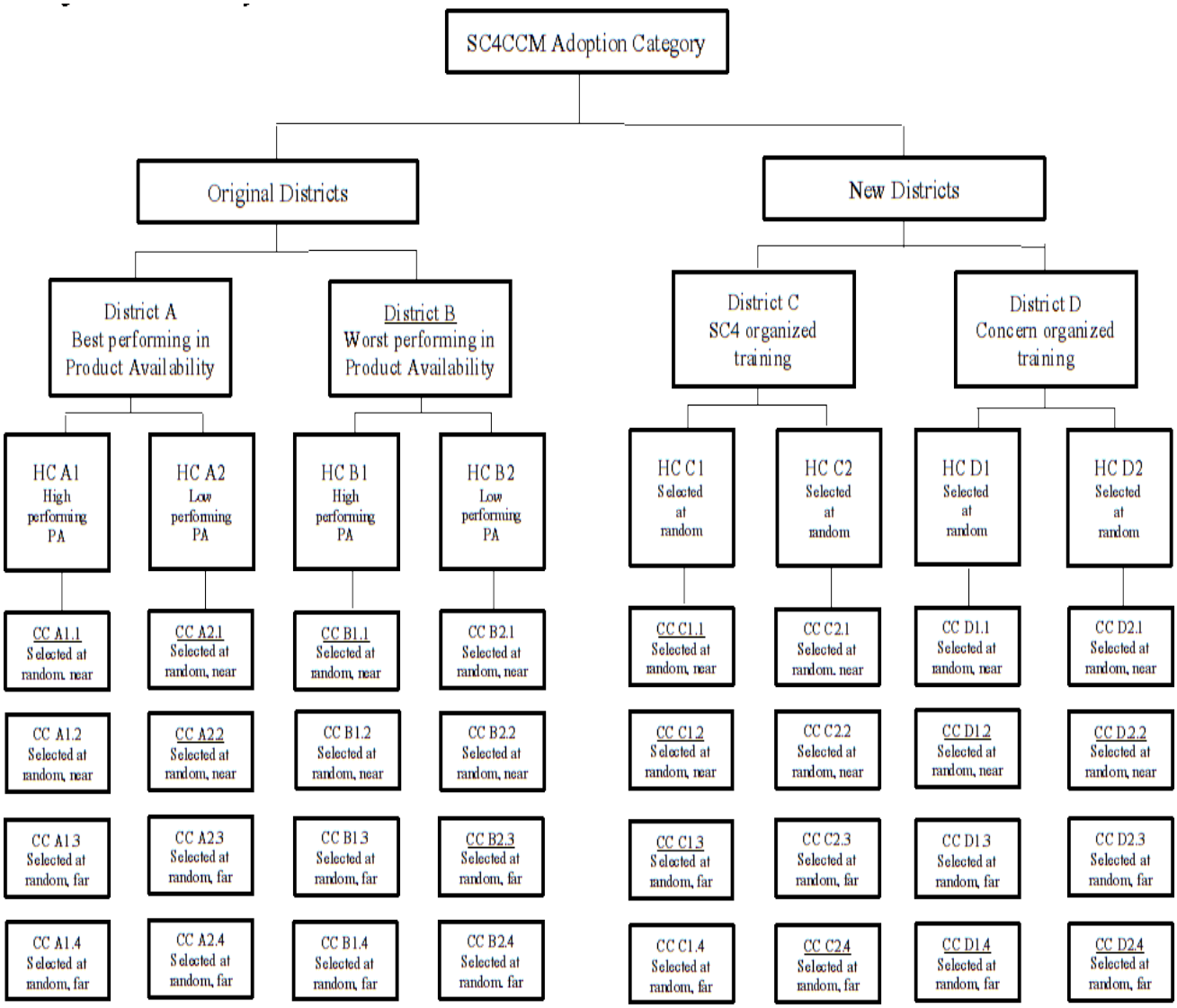
Appendix 1: Theory of Change



Appendix 2: Original Conceptual Framework



Appendix 3: Case Selection Approach



Appendix 4: Case Study Data Collection Plans, By Level[8]

Data Collection Plan for Health Center Staff

The team will conduct two data collection activities at the HCs:

- In-depth separate interviews with key HC staff members: CHW Supervisor and the HCPM

  *Note: The HC Titulaire (or equivalent) is not a designated interview, but an optional interview guide has been included in the instance that the Titulaire has been particularly influential in support of RSP training and scale up.

- Observation
- Pharmacist demonstration of RSW and magic calculator.
- CHW Supervisor demonstration of QIT tools and documentation for the past month.

  *Note: Due to scheduling constraints at each health center, it may not be possible to conduct a demonstration with both the CHW Supervisor and the Pharmacist. Although it is ideal to conduct a combined demonstration, if this proves impossible in a specific health center, interviewers should conduct the demonstration individually and be sure to note the circumstance in the observation transcript.

Each of these data collection activities will result in one electronic transcript; so, each HC visit will generate at least three transcripts. The team should determine, based on the relative burden of each activity, who should be primary note taker for each.

Data Collection Plan for Cell Coordinators

The team will conduct two data collection activities with the cell coordinators:

- In-depth interviews with pairs of CCs by Kinyarwanda-speaking interview team.
- In-depth interview with pair of CCs designated as hard to reach
- In-depth interview with pair of CCs designated as easy to reach

  *Note: CHW Supervisor should provide the reasoning behind each designation, interviewers should be sure to note this rationale on each interview transcript.

- Observation of RSP by French-speaking interview team.
- Observation of RSW and supervision checklists with pair of CCs designated as easy to reach
- Observation of RSW and supervision checklists with pair of CCs designated as heard to reach

  *Note: CCs should have been instructed by CHW Supervisor to bring copies of RSWs and integrated supervision checklists from the past three months. Additionally, if the CHW Supervisor would like to participate in the day's activities, they should be invited to oversee the observation exercise.

- Collective discussion with all CCs for any follow up questions from interviewers.

[8] These are extracted from the SC4CCM Rwanda Field Manual_ver7.docx

The Kinyarwanda-speaking interview pair will conduct in-depth interviews with one pair of CCs while the French-speaking interview pair conducts an observation with the remaining pair of CCs, then the CCs will switch interview teams. Each of these data collection activities will result in one electronic transcript; consequently, each HC visit will generate at least four transcripts from CCs. After pairs of CCs have completed both an in-depth interview and an observation, they will be invited to take a short break while the separate interview teams discuss their notes from the previous interviews and observations to clarify any remaining points and develop any necessary follow up questions. During this time, refreshments should be offered to CCs while they wait. After the interview teams have compared their notes, the group will reconvene for any additional follow up questions that the interview teams may require for further clarification.

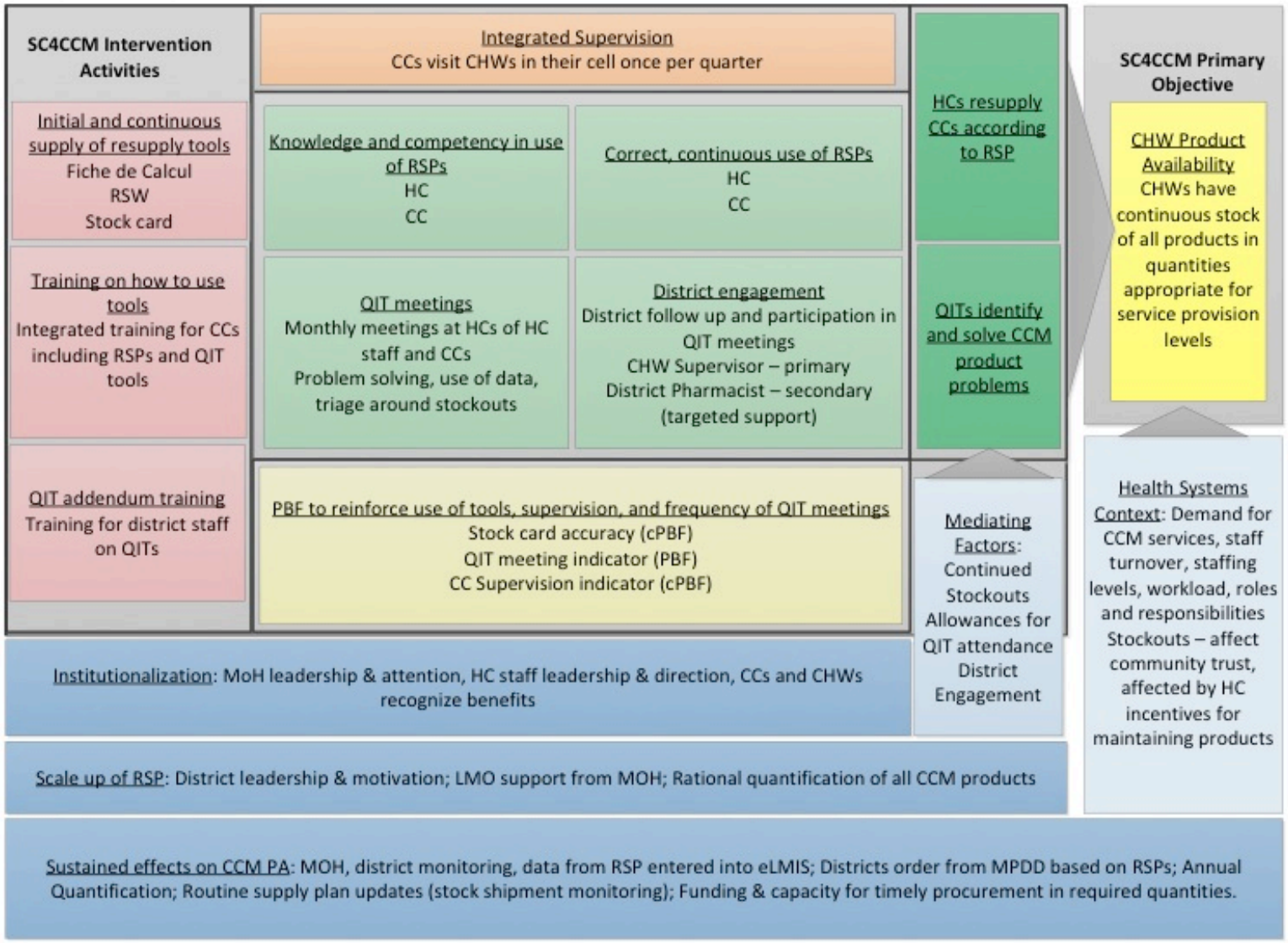
Data Collection Plan for District

District level interviews will take place following interviews with CC. The team will conduct three data collection activities at the district level:

- In-depth separate interviews with key district staff members: DCHWS, Data Manager, and the District Pharmacist

Each of these data collection activities will result in one electronic transcript; so, each district visit will generate at least three transcripts. The team should determine, based on the relative burden of each activity, who should be primary note taker for each. We will use primary and secondary note takers as needed and available.

Appendix 5: Revised Program Theory



Appendix 6: List of Participants at Dissemination Workshop

Name & Surname	Title	Organization/Location
Aline Josee Ubonyeneza	Data Manager	Kayonza
Maniriho Jacques	CHO	Kinihira
Niyonzima Eric	Pharmacist	Munini
Habyarimana M.James	Pharmacist	Nyabihu
Nsengiyumva Joel	ASC	Rukoma Sake
Sr Godebertin Uwimana	HC Director	Rukoma Sake
Munyaneza Theoneste	ASC	Rukoma Sake
Ngamije K Patient	HC Director	Ngarama
Karinda Viateur	HC Director	Remera Rukoma
Uwimana Agnes	Store Manager	Rutsiro
Mukandekezi Asterie	Store Manager	Gatsibo
Kabatesi Christine	CHW Supervisor	Rukoma Sake
Placide Nshizirungu	HC Director	Gihundwe
Simba Celline	HC Director	Mibilizi
Senzeyi B. Desire	M&E	Ruhengeri
Solomon Sindayiheba	HC Director	Rutongo
Nyirabwiza Harriete	Data Manager	Kamonyi
Nkurunziza Janvier	Data Manager	muhanga
Muhairwe	HC Director	Gicumbi
Rukabali Paul	Pharmacist	Nyanza DP
Mushinzimana Benjamin	Pharmacist	Nyanza DH

Name & Surname	Title	Organization/Location
Namanya William	Hospital Director	Kibungo
Rubanzabigwi	Hospital Director	Shyira DH
Sibomana	Data Manager Pharmacy	Musanze
Jean Marie Ndizeye	Deputy Pharmacy Manager	Rulindo
Ruberwa Jacques	Data Manager Pharmacy	Rusizi
Gahongayire Assumpta	Data Manager Pharmacy	Nyaruguru
Kanyamuhanda J.Baptiste	CHW Supervisor	Kirehe
Mutabazi	Deputy DP	Kirehe
Celestin Ntiziremye	CHW Supervisor	Bugesera
Mukamugema M. Claire	Data Manager Pharmacy	Nyamagabe
Rugwizangoga Emmanuel	Deputy DP	Ngoma
Eugene Niringiyimana	Data Manager Pharmacy	Rutsiro
Yasmin Chandani	Project Director	JSI/SC4CCM
Mildred Shieshia	Regional Logistics Advisor	JSI/SC4CCM
Patrick Nganji	Resident Logistics Advisor	JSI/SC4CCM
Deogratias Leopold	Logistics Advisor	JSI/SC4CCM
Golbert Kazoza	Logistics Officer	JSI/SC4CCM
Saul Kidde	Project Director	JSI/USAID | DELIVER
Beatrice Nyiranzeyimana	M&E Officer	Concern Worldwide

Appendix 7: Stakeholder Recommendations and Action Plan

	Issue / problem definition	Recommendation/Action	Responsible
CHW and HC Level	Limited/lack of data for use for QIT	• Operationalize and implement the cPBF indicator for CCs to conduct supervision and collect data on SC indicator on stock card accuracy • Provide all CCs have the current integrated supervision check list to use for collection of data to support QITs	MCCH/CHD CHD/HC staff
	CC Skills in conducting supportive supervision	• Formative Supervision to cell coordinators to boost their skills in conducting supervision and data collection	HC
	Frequency and regularity of QIT meetings	• Development of a Quarterly Calendar for QIT meetings • Operationalize and implement the PBF indicator to track number of QIT meetings held • Develop a standardized report to serve as a verification source for QIT meetings held at HC	HC in consultation with District Coaches HC in consultation with PBF team CHD/PBF team
	Correct and Consistent use of RSPs	• Operationalize and implement the PBF indicator on stock card accuracy • Conduct quality and effective QIT meetings	MCCH/CHD HC in collaboration with District Coaches

District level	District engagement in QITs	• Integrate QIT activities into annual district hospital and pharmacy activity plans (to ensure they are implemented, monitored and evaluated at end of each quarter) • Sensitization of DHMT on QITs and their role in monitoring implementation • Monitoring of QIT activities in district Annual plans • Provide initial orientation to the QITs on QIT process and get them started.	DH and DP with DHMT approval CHD and DHMT DHMT and DP District CHW Supervisor and District Pharmacist
National Level	Institutionalization, oversight, and policy direction for RSPs/QIT for long term sustainability	• Integrate Performance Monitoring Plan (PMP) for QIT activities into the overall CHD program M&E Plan • Using the PMP follow up and plan for support to districts/HC that have not started QITs to ensure they start	MCCH/CHD
	Institutionalization of RSPs/QITs as standard supply chain practices with mechanisms and funding for on-going support	• Incorporate the QIT addendum training into the integrated refresher training for CHWS • Develop/Review clear guidelines and protocols for review of RSPs • Plan and Budget for continuous printing and distribution of RSP and QIT tools • Build a pool of coaches and trainers for RSPs and QITs • Develop a plan for orientation of new staff and skill transfer in case of turn over	MCCH/CHD
	Integration of RSPs into eLMIS or as part of an electronic system	• Ensure community logistics data capture from RSW into the eLMIS • Explore opportunities such as DHIS 2 for electronic reporting community logistics data by CHWs to improve data visibility and use across various levels	HC Data Manager MCCH/CHD

	Disconnects in community product availability	• Use community data available on the RSW (Ifishi Umujyanama Yakiraho Imiti) for reporting and ordering of community level products from District Pharmacy.	HCPM
		• Actively participate in the coordination meetings (all head of HCs and District Hospital) and provide information on PA in the district.	DP
		• Use community data to requisition at the MPPD	DP
		• Accurately Complete and submit the RSW worksheet on a monthly basis	CC