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Building Health Facility Autonomy: Redesigned delivery of the Integrated Management of Childhood Illnesses Trainings in Rwanda

A Case Study¹

September 2018

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Summary

From October 2015 to September 2018, the United States Agency for International Development's (USAID) flagship Maternal and Child Survival Program (MCSP) in collaboration with the Rwandan Ministry of Health (MOH), used **innovative approaches** to deliver Integrated Management of Childhood Illnesses (IMCI) trainings rolled out in ten out of 30 districts in Rwanda. MCSP helped train a total of 933 care providers: 307 were trained through a Low Dose High Frequency (LDHF) model and 626 through On-the-Job Training (OJT). This effort increased the percentage of IMCI trained providers available in health facilities from 22% to 79%.

Innovative modeling for IMCI training: The classic IMCI training module was first re-packaged into a LDHF model. This remodeling of the classic IMCI training module was the first of its kind. The LDHF training was then delivered in a two-day course at District Hospitals each week over three consecutive weeks allowing trainees to return to their workplaces for the remainder of the week to immediately put to test their newly acquired skills. In the 10 districts in which MCSP was working, there was a total of 163 health centers. Two providers per health center in all 163 health centers were enrolled in the first phase of the training. During the second phase, an OJT approach was developed to build upon the IMCI Computerized Adaptation and Training Tool (ICATT) and ensure that IMCI training built providers' skills (as opposed to only building knowledge). The OJT was organized in seven sessions held over seven months, using the ICATT software and clinical practices. The lead providers trained through LDHF were also empowered to become local mentors to their peers in the same health centers during the second phase. A network of 56 district mentors was established to further improve the quality of child health services and to build the autonomy of districts to conduct IMCI training within their catchment areas.

Outcome of new trainings: The new training approaches surpassed WHO's standard criteria for the classic IMCI training, and *the providers who underwent either LDHF or OJT outperformed those who received classic training in all components of IMCI with the exception of counseling of the mother.* In addition, routinely reported data between January 2016 and June 2018 demonstrated an increase of the proportion of sick children treated according to the national protocol from 53% to 85% in supported districts, compared to a national average increase from 55% to 72% during the same period. A brief review of project expenses demonstrated reductions in training costs from an average of \$513 per trainee in the most recent model of IMCI classic training to \$313 per trainee in LDHF and to \$106 per trainee in OJT.

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What MCSP learned: Through the implementation of a new training model for IMCI, MCSP learned that decentralization of capacity building is the way forward in Rwanda and that it is extremely important to empower and give autonomy to staff and managers at the health center level. In addition, we demonstrated that once empowered, regular care providers have an exceptional capacity to transfer competence to their peers. Systematic testing and iterative learning were key during the process of redesigning the delivery of IMCI training in Rwanda. As a way forward, we recommend efforts be made to maintain the momentum in the 10 supported districts, and further adaptations keep focus on simplicity, user-friendliness, cost-consciousness and clinical practice. Lastly, the next generation of managers and providers will benefit from a strong pre-service training program to adequately prepare them for their future job.

MCSP reached higher coverage through a re-designed approach of IMCI training, resulting in an increase in the proportion of sick children being treated according to national guidelines from 53% to 85% in its 10 supported districts (of 30 total in Rwanda) during the implementation phase.

Introduction

This case study describes a package of capacity building interventions developed and implemented for child health services by USAID's flagship MCSP and the Rwandan MOH specifically from October 2015² to September 2018. The intervention described in this case study is part of MCSP's support to the MOH in its efforts to implement high impact interventions in Reproductive, Maternal and Child Health (RMCH) and malaria in Rwanda.

IMCI is a strategy developed by the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) in 1995, that focuses on the whole child and encompassing curative care and prevention of disease. A global strategic review of IMCI conducted by WHO in 2016 concluded that while there has been near universal adoption of IMCI by target countries, the guidelines and tools do not fully serve countries' needs in terms of flexibility, adaptability and user-centered design.^{3,4} While the Government of Rwanda has kept IMCI as the heart of its strategy to reducing child mortality, the application of the IMCI approach has been challenging. MCSP's capacity-building package described in this case-study aims to address these challenges in a way that responds to WHO's call for "flexibility, adaptability and user-centered design".

With MCSP's assistance, the Rwandan MOH conducted IMCI trainings in 10 districts (out of 30 total districts in Rwanda) and through a re-designed delivery of the IMCI training, improved the efficiency and effectiveness of the capacity development system **building the capacity of 933 care providers in 163 health centers**. Additionally, with the re-design of the IMCI training, a network of 56 district mentors was established to improve the quality of child health services and to build the autonomy of the districts to conduct IMCI training within their catchment areas. **As a result, the percentage of IMCI trained providers increased from 22% to 79%**, with a training model that surpasses WHO's standards, also, with less cost. Figures from the National Health Management Information System (HMIS) show that the reported **proportion of sick children treated according to the national guidelines has increased from 53% to 85% between January 2016 (launch of the program) and June 2018** in the 10 districts supported by MCSP, suggesting an increased availability and utilization of quality services in child health.

Rationale

Since the adoption of the Millennium Development Goals (MDG) in the year 2000, Rwanda made remarkable progress in reducing under five mortality from 152 to 50 deaths per 1,000 live births⁵, effectively achieving the MDG 4 target of reducing child mortality by two thirds. Along with strong hospital-based interventions and large-scale Integrated Community Case Management (iCCM) program, Rwanda has kept IMCI as the heart of its strategy to reducing child mortality. Despite these improvements, the application of

² MCSP started implementing programs in Rwanda in October 2014, but the activities described in this case study started at this time.

³ World Health Organization (2016), Towards a Grand Convergence for Child Survival and Health, A strategic review of options for the future building on lessons learnt from IMNCI

⁴ BMJ Series (2018) Global implementation survey of Integrated Management of Childhood Illness (IMCI): 20 years on: <https://bmjopen.bmj.com/content/8/7/e019079.info>

⁵ National Institute of Statistics of Rwanda. (2016). Rwanda Demographic and Health Survey, 2014-2015. <https://doi.org/10.1007/s13398-014-0173-7.2>

the IMCI approach has faced a number of challenges, including low coverage of trained healthcare providers and high turnover, difficulties in compliance with guidelines and limitations in the quality of care provided, and human and financial resource constraints to support the traditional IMCI trainings. Addressing these challenges, while building on the successes of iCCM and the immunization program, and at the same time, strengthening key multisectoral interventions such as economic growth, women's education, and water-sanitation-and-hygiene would further accelerate the reduction in child mortality towards achieving the Sustainable Development Goals (SDG) in 2030.

Statistics from an IMCI Health Facility Survey (HFS) conducted by the MOH in collaboration with WHO in 2015, reported 25% of health facilities having at least 60% of health workers trained in IMCI⁶. However, this percentage is much less when high rates of staff turnover are taken into account. In a facility readiness assessment conducted by MCSP October and November 2016, prior to implementation of activities⁷, **data collected from 145 health centers in 10 districts found that only 5.5% of the facilities had 60% or more health workers trained in IMCI. Based on the assessment, supporting the MOH to increase the number of health workers trained in child health services became a priority.**

A nationwide HFS conducted by the MOH and WHO in 2015 demonstrated large gaps in compliance with the guidelines in almost all components of the IMCI including identification of danger signs, classification of disease, and treatment of the child and the counselling of the caretaker⁸. **Only 42% of children seen by IMCI trained providers during the survey were checked for danger signs**; about 67% of children were systematically assessed for cough, diarrhea and fever; and overall, only 65% of the children were correctly classified. Most alarming, only 8% of the children with severe illness were treated correctly. This finding was particularly worrisome because it demonstrated that the very sick children - those at greatest risk of dying - are poorly managed. During the review of the findings and many subsequent meetings of the national child health Technical Working Group (TWG), the quality of trainings on the IMCI strategies was called into question and aggressive approaches for improvement thoroughly discussed.

By the time MCSP started implementation, Rwanda was already implementing the shortened version of IMCI training (6 days total) and had introduced the IMCI ICATT. Yet the main limiting factors to the scale-up the IMCI trainings to the desired levels remained financial viability and health workers being absent from their duties to attend off-site trainings.

The new approach to IMCI trainings developed by MCSP in collaboration with the MOH, aimed at building a critical mass of trained IMCI providers, improving trained provider's skill utilization through mentorship, alleviating the burden of providers' absence from health facilities during trainings, improving the quality of trainings and reducing the training cost.

Implementation Approach

In 2016, MCSP introduced a new combination of various training approaches to improve retention and performance of health care providers' skills as well as creating a district level pool of mentors to support trainings and conduct post-training follow-up and mentorship visits. The new implementation approach included providing short, structured, onsite, interactive learning methodologies known as LDHF in-service training, combined with OJT using ICATT computer technology.

I. Assessment of providers' skills and availability of technology platform

In October 2015, MCSP began activities by conducting a comprehensive knowledge and skills assessment among providers trained in different technical areas. The assessment had a dual purpose: (1) to establish a baseline against which providers trained under MCSP programs would be compared and (2) to identify the

⁶ Rwanda Biomedical Center and WHO (2015), Rwanda IMCI Health Facility Survey report. This was also reflected in WHO's global strategic review of IMCI in 2016: World Health Organization (2016), Towards a Grand Convergence for Child Survival and Health, A strategic review of options for the future building on lessons learnt from IMNCI

⁷ Rwanda Biomedical Center and MCSP (2016), Rwanda Reproductive, Maternal, Newborn and Child Health Facility Service Availability and Readiness Assessment Results

⁸ Rwanda Biomedical Center and WHO (2015), Rwanda IMCI Health Facility Survey

most proficient providers in high impact interventions such as neonatal care, child health and family planning to serve as district level mentors. In the area of IMCI, the initial skills assessment aimed at observing at least one IMCI trained healthcare provider per health facility across the 10 MCSP-supported districts. After data cleaning and processing, information from 113 observations were analyzed.

In addition, MCSP's facility readiness survey⁹ also assessed pre-requisites of technology use, including availability of computers and access to electricity. Data from 148 facilities demonstrated that an average of six computers were available per health facility, with a minimum of four and a maximum of nine. One hundred and thirty-six health facilities (92%) were connected to the national electrical grid while 12 health facilities (8%) used a solar energy system or diesel powered power generators. With these findings, it became clear that the opportunity to use computer-based learning in the health centers was possible.

2. Redesign of IMCI training materials and tools

Repackaging IMCI training into Low Dose High Frequency (LDHF) process

LDHF training is composed of short, targeted simulation-based learning activities, which are spaced over time and reinforced with structured, ongoing practice sessions at the job site to sustain learning and to support decision-making. A separate case study, describing LDHF on high-impact interventions in Rwanda, was published by MCSP in 2018.¹⁰

Specific to IMCI, MCSP adapted the LDHF approach to be delivered as a six-day course at the District Hospital over three weeks using a new model illustrated shown in Table 1. This new design included limited classroom sessions and clinical drills during the two days of training, and then participants would return to their health facilities to carry out normal working hours during the three remaining work days of the week. Such schedules ensured trainees would immediately put to test their newly acquired skills, and ensured they were not pulled away from their normal working hours for six consecutive days (per the classic IMCI trainings).

Table 1: Training Schedule and Topics covered in Three Weeks of Low Dose High Frequency (LDHF) Training in IMCI

Session	Agenda	Technical content covered
Week 1	Day 1: Intro, Assess-Classify-and-Treat 2-59 months [Part 1]	IMCI process, General Danger Signs, Cough, Difficulty Breathing
	Day 2: Clinical Demonstration, Clinical Drills	
→ Trainee returns back to health center to apply new knowledge and continues regular work hours		
Week 2	Day 3: Assess-Classify-and-Treat 2-59 months [Part 2]	Diarrhea, Fever, Ear problems, Nutrition and Anemia, HIV, TB, Immunization
	Day 4: Clinical Demonstration, Clinical Drills	
→ Trainee returns back to health center to apply new knowledge and continues regular work hours		
Week 3	Day 5: Assess-Classify-and-Treat 7 days to 2 months Assess-Classify-and-Treat 0 to 7 days	Bacterial Infection, Diarrhea, Feeding Problems, Exposure to HIV and Immunization, Hypothermia, Eye Infection, Jaundice
	Day 6: Counsel [Review], Follow-Up Visit, Wrap-Up	
→ Trainee returns to health center to apply new knowledge		
→ Follow-up and reinforcement occurs during consecutive mentorship and supervision visits		

Source: IMCI LDHF Training material, MCSP-RBC Rwanda 2018

⁹ Rwanda Biomedical Center and MCSP (2016), Rwanda Reproductive, Maternal, Newborn and Child Health Facility Service Availability and Readiness Assessment Results

¹⁰ Maternal and Child Survival Program (2018), An Alternative to Classroom-Based Health Worker Training in Rwanda, MCSP Rwanda Case Study, available at www.mcspprogram.org/resource/an-alternative-to-classroom-based-health-worker-training-in-rwanda/

The LDHF training targeted two lead providers per health center and was facilitated by the newly trained district level mentors. The two providers who completed LDHF training then served as peer mentors for their colleagues in health centers who undertook IMCI on the job training (OJT) in the subsequent phases described below in order to reach the maximum number of providers.

While maintaining all technical content on the national IMCI guidelines, the most significant aspects of MCSP's redesign included:

- Packaging a set of symptoms to address each week and completing the technical content from assessment through treatment, in contrast with the IMCI classic training. This modification is in line with WHO's principles for the IMCI distance learning approach,¹¹ and furthermore, it equipped the trainees with the skills required for self-practice in the following days at the health center.
- Reducing the time spent on literature and theories in favor of pragmatic hands-on practice and exercises supported by simplified session plans.
- Editing audio-visual materials to fit the new process (final format include 84 short video clips and 22 images) to support learning and exercises across the course.

OJT using IMCI Computerized Adaptation and Training Tool (ICATT)¹²

To reach all providers in charge of treating sick children in MCSP-supported health facilities, MCSP supported OJT using the ICATT software already adapted to the Rwandan IMCI guidelines. This was the first ever documented use of ICATT to support OJT as a large scale in-service training tool in Sub-Saharan Africa. In addition to the two lead providers trained as local mentors in the previous phase described above, four *additional* providers *per health center* were also targeted for OJT. The program was able to enroll on average an additional four providers per health facility.

MCSP supported On-the-Job-Training using ICATT in Rwanda--the first time ever that the use of ICATT as an in-service training tool for IMCI in large scale has been documented in sub-Saharan Africa.

The heads of the health centers, or titulaires, were empowered to coordinate the process and support the health providers to complete the ICATT training. Specifically, the titulaires were given the responsibility of (1) making sure that targeted providers had access to a computer, (2) arranging shifts and work schedules to allow for training during working hours, (3) identifying and assigning a facility peer-mentor already trained through LDHF for each trainee and arranging for clinical practice opportunities and (4) providing moral support and encouragement to the staff undertaking the training.

The training materials were carefully rearranged to be delivered in 7 sessions over 7 months as illustrated by Table 2 below. An introduction to each training module was made by district mentors during their monthly mentorship visit to the health center. Between sessions, providers completed the module in ICATT and practiced the newly acquired skills with their facility peer mentors, adding the skill-building focus on top of the knowledge-building component already embedded into the ICATT software.

Table 2: Modules Covered in Seven Months of On-the-Job Training using Computer-Assisted Training Tool (ICATT)

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
General danger signs, Cough	Diarrhea	Fever, Ear Problems, Nutrition and Anemia	HIV, TB, Immunization	Treat, Counsel, Follow-up	Management of Sick Infant 1 week to 2 Months	Management of Newborn 0 to 7 Days

Source: IMCI OJT Training material, MCSP-RBC Rwanda 2018

¹¹ IMCI set of distance learning modules: https://www.who.int/maternal_child_adolescent/documents/9789241506823/en/

¹² Integrated Management of Childhood Illness computerized training tool: https://www.who.int/maternal_child_adolescent/documents/icatt/en/

The OJT training consisted of the following components:

- **Short monthly introductory sessions:** (two to two and half hours) to introduce the modules of ICATT. These sessions were facilitated by the district level mentor and were scheduled on a monthly basis to coincide with the monthly mentorship calendar.
- **Mandatory reading in ICATT:** For each module, participants logged into their ICATT accounts to complete the reading, exercises and tests related to the chapter. The software automatically recorded the progress of each individual trainee and the number of assignments completed.
- **Exercise review sessions:** to strengthen knowledge. After the introductory session, participants met again at least once a month to assess their progress, share experiences and review the exercises about the introduced module. The facility peer mentors (those who completed LDHF) assisted OJT trainees perform the exercises.
- **Clinical practice:** Trainees were paired with facility peer mentors to perform clinical practice related to the chapter in real setting. In their following mentorship visit, district-level mentors review the records of clinical practice and provide additional feedback as needed.

3. Implementation of a decentralized model of training and mentorship pools

Since the introduction of IMCI in Rwanda in 2006, IMCI capacity building has relied on a small handful of national trainers based in the capital city Kigali. After consultation with the MOH and the districts, it was determined that the best way to scale-up IMCI training was to decentralize training capabilities to the district level. The most competent and proficient providers were identified and trained to constitute a pool of district-level mentors and trainers, serve as facilitators of the LDHF and OJT IMCI trainings, and extend IMCI training and mentorship capacity beyond Kigali. By having their own mentors and trainers, health districts had autonomy to organize IMCI capacity building activities within their catchment area. Each district level mentor supported four health facilities per month.

4. Supervision and monthly mentorship visits

In order to accompany a vast national effort to establish a strong mentorship program, MCSP supported the MOH to develop the first strategy and guidelines for clinical mentorship in RMCH programs¹³. In the field, the 56 district-level mentors trained and supported by MCSP used the guidelines and tools during monthly visits to help providers trained in LDHF address remaining gaps in knowledge and skills, and overcome obstacles hindering daily practice of IMCI. These visits replaced the post-training visits in classic IMCI training and were integrated into the skill-building process. Tools used by mentors included checklists and skills assessment guides to evaluate provider competencies, and to identify and address issues. In order to validate their IMCI certification, each individual mentee received a minimum of three mentorship sessions and had to score an average of 80% or more on 3 consecutive skills evaluations.

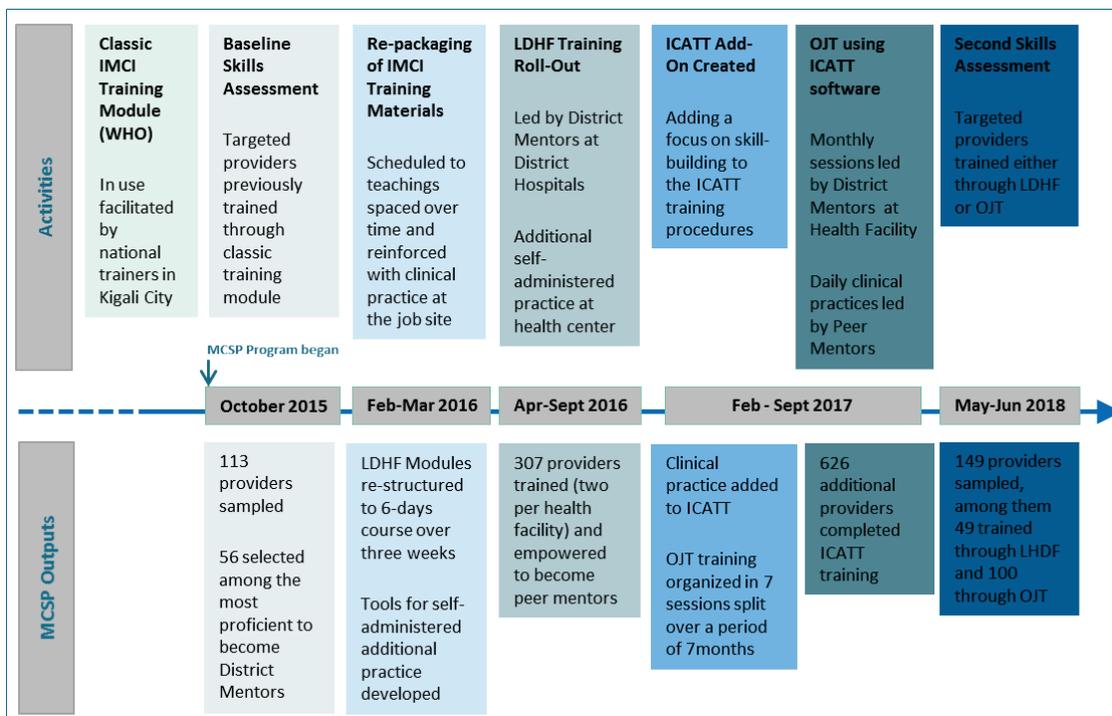
With support from MCSP, 56 IMCI district level mentors completed a Training of Trainers (TOT) that consisted of a 5-day IMCI refresher course followed by a 5-day andragogy course to learn skills and techniques to facilitate adult learning. The newly established pool of district level mentors then led the implementation of the LDHF IMCI trainings in all 10 health districts supported by MCSP. A total of 307 providers completed the LDHF IMCI trainings across the 10 districts.

Once the LDHF-trained mentees built enough self-confidence in service provision, they become facility peer mentors within their own facilities and helped the *titulaires* identify additional providers to enroll in OJT ICATT training. A total of 626 successfully completed the ICATT training through this process.

The main activities, outputs and overall timeline of training are presented in Figure 1, and the number of IMCI mentors and trainees is summarized in Table 3.

¹³ The Rwandan national guideline for clinical mentorship and accompanying tools cover four key RMNCH technical areas: Maternal health, Newborn health, Child health and Family planning

Figure I: Activities, Timeline and Outputs of MCSP-Supported Decentralized Model of Capacity-Building



Source: MCSP program record

MCSP supported the Rwandan MOH to develop the first strategy and guidelines for clinical mentorship for health care providers in Reproductive, Maternal and Child Health services.

Data Collection and Analysis

I. Methodologies and processes

Research questions

To measure the effectiveness of the decentralized approach to capacity-building in IMCI, we analyzed changes in quality of the redesigned training packages, availability of trained providers at health facilities, competency and practices of trained providers, and the availability and use of IMCI services. We also included budget considerations for implementing such an approach. The following questions were explored through this assessment:

- Have LDHF and OJT training approaches met the WHO gold standard criteria for IMCI in-service training?
- Were IMCI-skilled personnel available to provide child health services in MCSP-supported health facilities at the end of the program?
- Do providers trained through LDHF or OJT approaches have the same skill level as those receiving classic training?
- Have MCSP's efforts had any effect on the utilization of child health services?
- How did the cost of LDHF and OJT approaches compare to costs of classic training?

Data sources

The data presented in this case study came from project implementation records, health facility surveys and assessments, and existing routine data from the national HMIS.

- *Skills assessment through direct observation.* Two assessments of providers using the standard IMCI observation tool were conducted, including a reexamination of the child by a national trainer as the gold standard observer. The first assessment was part of a comprehensive RMNCH skills assessment in October 2015 to establish a baseline (1st data point). At least one trained healthcare provider per technical area was observed in each health center across 10 MCSP-supported districts. After data cleaning, 113 IMCI observations were used to establish a baseline. The second assessment was an evaluation conducted during May and June 2018 in the same health centers to determine the level of competency of providers trained through the MCSP program. This second evaluation targeted each health center across 10 MCSP-supported districts. The provider delivering IMCI services at the facility at the time of the evaluation was observed. Data from observations of a total of 149 providers during the second assessment were used for analysis, among them 49 providers had been trained in LDHF (2nd data point) and 100 trained in OJT (3rd data point).
- *Routine data.* The proportion of sick children presenting to health centers who were treated according to IMCI guidelines is routinely collected through the national system, reported on a monthly basis and posted on a DHIS2 system. The official data reported countrywide and from the 10 MCSP-supported districts were used to establish a trend from baseline during the duration of the program.
- *Program records.* Training indicators (e.g., number of people trained, quality of training) were extracted directly from MCSP's training database, and costs were extracted from the project's budgeting tools and financial reports.

2. Limitations

- An observed skills assessment does not necessarily reflect the routine behavior and practice of the provider in their daily activities. However, the tools and methodology utilized are the gold-standard for WHO's Health Facility Surveys for IMCI. Additionally, the health providers assessed were not randomly selected; evaluators assessed the person providing IMCI at the job site on the day of visit.
- While the environment in which care providers performed during consecutive observations can be considered comparable, other factors might have influenced the outcome, including the difference in time lapse between the date of training and the date of the observations. Therefore, we cannot conclude that the quality of IMCI training is the only factor that led to the observed performance level.
- The proportion of sick children treated according to IMCI guidelines reported through routine data *only* means that the provider used the proper tool. This consideration is important because the reported proportion does not necessarily mean that the protocol was correctly executed.
- Financial data presented in this case study provides only a general indication for program planning and budgeting purposes, and should not be interpreted as an in-depth cost-analysis.

Results

1. Better quality of training compared to the traditional approach

When WHO developed the original generic IMCI modules in 1995, a set of standard criteria was set and consistently applied to evaluate the quality of the course¹⁴. We respectively compared the LDHF and OJT training models against these gold standards, and concluded the following (also reference Table 3):

- *Better focus on individual progress.* The number of participants per course approximated WHO standards in LDHF, and was lower in OJT. In principle, fewer participants in a training session allows for more active interactions between trainers and participants and more opportunities to address individual training needs.

¹⁴ Integrated Management of Childhood Illness (IMCI) Implementation in the Western Pacific Region, IMCI Training Course for First-level Health Workers (In-service training), 2009

- **More opportunities for clinical practice.** While the ideal facilitator to participant ratio was not fully met in LDHF (also very frequent in classic training), the proportion of time allocated for clinical practice was very high in both LDHF and OJT. This was because of self-practice at the job site in LDHF (three additional days between weekly sessions) and regular peer-observed practices in OJT (spread over seven months).
- **Stricter validation criteria.** LDHF and OJT surpassed the validation criteria per trainee by increasing the minimum number of cases seen from 20 to 30, and by adding an additional condition of at least 80% of sick children correctly managed. The vast majority of clinical cases in LDHF and OJT are real cases of sick children managed at the job site and recorded in health facility registers, as opposed to sample children seen exclusively for training purposes during the classic training.

Table 3: Comparison of standard criteria in Low-Dose-High Frequency and On-the-Job Training against WHO’s standards for classic IMCI training

Criteria	WHO’s standards for classic IMCI training	Low-Dose-High Frequency	On-the-Job Training
Total duration	11 or 6 days	3 weekly sessions of 2 days each	7 monthly sessions
# of participant per course	Max. 24	Avg. 26	Avg. 6
Facilitator: Participant ratio	1:4	1:6	1:4
Time allocated for Clinical Practice	30% of training time for observed practice	25% of training time for observed practice + 6 days of self-practice	Peer accompaniment + Continuous daily practice
Validation criteria per trainee	Completion of course	Performance of 85% on post-training test.	Tests and exercises built into ICATT
	Minimum 20 clinical cases seen during the duration of training	Minimum 30 sick children at health facility recorded in register	Minimum 30 sick children at health facility recorded in register
	No specific criteria for correct case management	At least 80% correctly managed among cases seen	At least 80% correctly managed among cases seen
Post-training follow-up	One follow-up visit within a month	Mentorship within a month and continued	Continuous on-site peer-mentorship

Source: MCSP-RBC Rwanda training reports

2. Increased availability of IMCI-trained providers

LDHF and ICATT-assisted OJT helped increase the percentage of IMCI trained providers from 22% to 78% in MCSP-supported districts. The standard of “health facilities with at least 60% of their providers trained in IMCI” has been recommended by WHO and widely used by countries implementing IMCI to measure their achievements in IMCI implementation¹⁵. According to program records, from 2015 to 2018 the proportion of health facilities in MCSP supported districts that met WHO’s standard increased from 5.5% to 77.2% through implementation of the decentralized model of training, while the national average was 25% according to a 2015 WHO survey¹⁶.

Among the 145 health centers assessed at the start of MCSP interventions, the number of facilities with at least 60% of their providers trained in IMCI increased from 8 (5.5%) to 122 (77.2%).

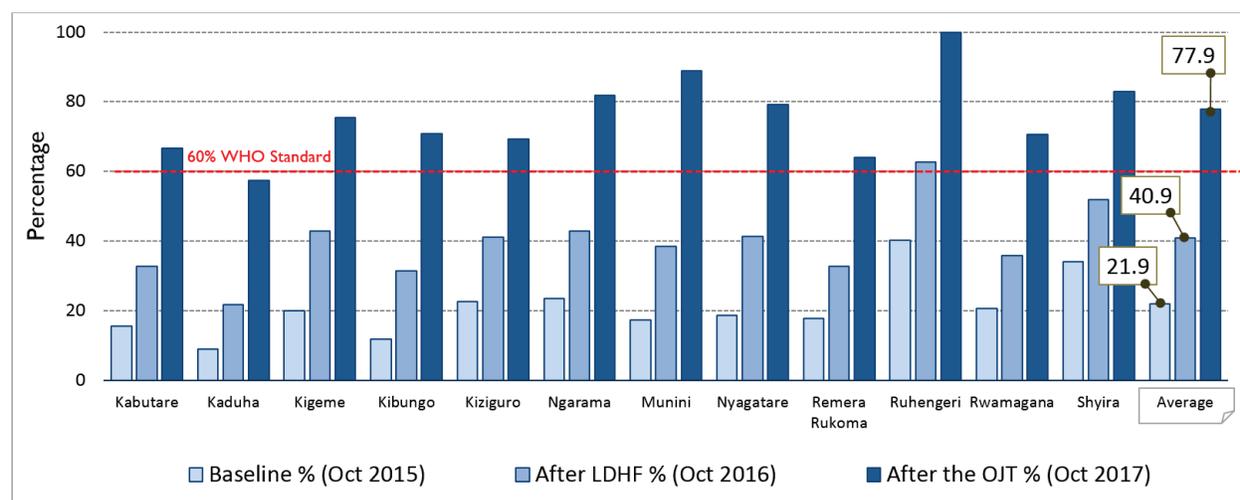
Figure 2 shows the evolution of the percentage of providers working in outpatient sick child care in health centers that are trained in IMCI. Data are presented by district hospital catchment area in the 10 MCSP-

¹⁵ Lambrechts, Bryce and Orinda (1999), Integrated Management of Childhood Illness: a summary of first experiences, Bulletin of the World Health Organization, 1999, 77 (7) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2557705/pdf/10444882.pdf>

¹⁶ Rwanda Biomedical Center and WHO (2015), Rwanda IMCI Health Facility Survey report. This was also reflected in WHO’s global strategic review of IMCI in 2016: World Health Organization (2016), Towards a Grand Convergence for Child Survival and Health, A strategic review of options for the future building on lessons learnt from IMNCI

supported health districts from the baseline in October 2015 to the time the LDHF training intervention was completed (October 2016) and lastly to the time OJT training was completed (October 2017).

Figure 2: Percentage of Providers Trained in IMCI per District Hospital Catchment Area Before and After LDHF and OJT



Source: MCSP program record

3. Improved skills in the most essential components of case management

MCSP observed that providers who underwent either LDHF or OJT outperformed those who underwent classic training in key components of IMCI except counseling of the mother. Providers trained through LDHF received individual mentorship support from district mentors while providers trained through OJT received daily mentorship support from their local peer mentors trained through LDHF. Figure 3 presents the comparison of the skills of those trained in the three different approaches.

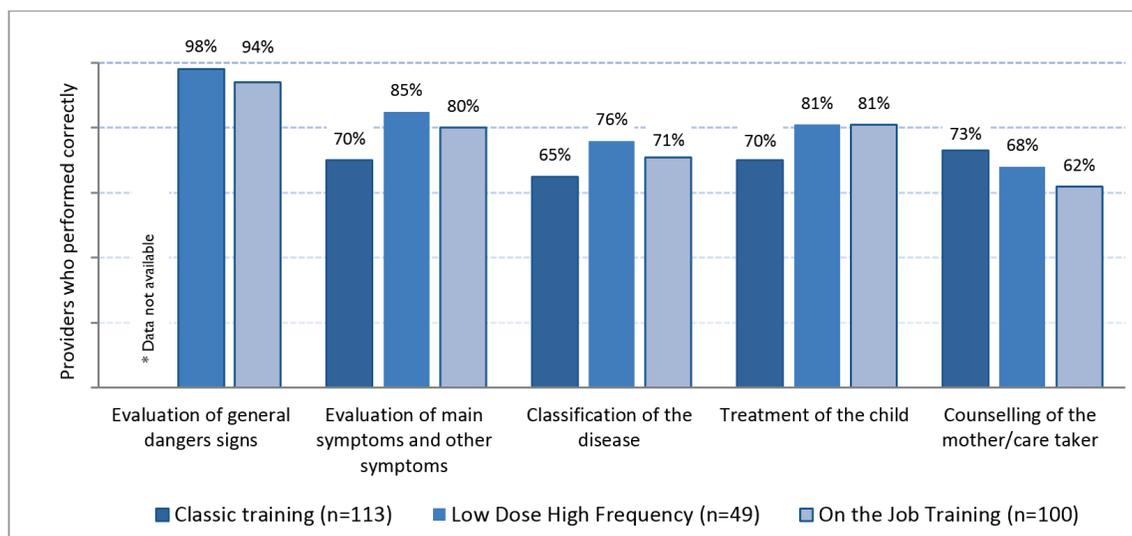
Almost all providers who underwent either LDHF or OJT demonstrated mastery on the evaluation of children for danger signs. Respectively 98% and 94% systematically elicited the general danger signs to identify children who require immediate referral to the hospital after the administration of urgent life-saving treatments. Although data are not available to compare with MCSP's baseline assessment, this finding underscores the tremendous efforts and particular focus that MCSP and the MOH put on this specific aspect following major concerns expressed in the 2015 IMCI national facility survey - using comparable methodology - which found that only 42% of sick children were assessed by trained providers for danger signs¹⁷.

Following the new IMCI training approach, significantly higher performance was observed in the evaluation of IMCI main symptoms, classification and treatment. The results show that LDHF and OJT participants performed better (respectively 85% and 80% correctly performed patient evaluation) compared to those who received classic training (70%). Providers trained under LDHF and ICATT-assisted OJT performed better in treating the child (both an average of 81%) than those who undertook classic training (70%).

Unlike the other components of IMCI, providers trained with classic training performed better on counselling the mother (73%) compared to those trained under LDHF and computer-assisted OJT (respectively 68% and 62%). The data suggest that performance on counselling was lowest among those who undertook computer assisted OJT. Possible explanations include that counselling is among the last training chapters and consequently some providers may not have covered it entirely, and this is probably a skill that is better learned and improved through experience and support systems.

¹⁷ Rwanda Biomedical Center and WHO (2015), Rwanda IMCI Health Facility Survey

Figure 3: Percentage of providers who performed correctly the key components of IMCI case management: providers trained with IMCI classic training, Low Dose High Frequency and On the Job Training



* Data on evaluation of general danger sign was not collected during the skills assessment at baseline

Sources: MCSP baseline skill assessment October 2015 and second skill assessment May-June 2018

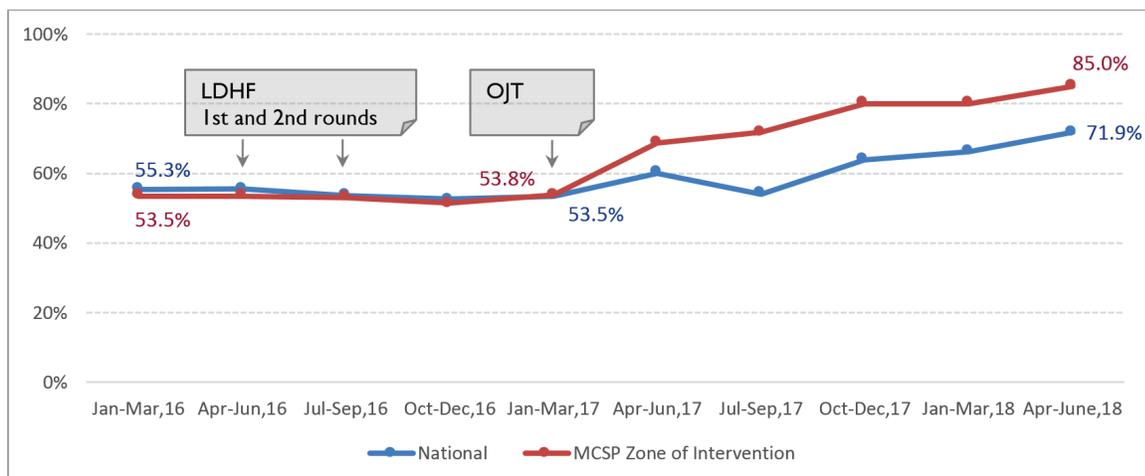
4. Increased availability and utilization of child health services

Not only was there an increased availability of trained providers and improved skills among the providers, also the data from the national HMIS demonstrated a positive trend the uptake of IMCI services in MCSP-supported areas compared with national trends. As displayed in Figure 4, the records from the launch of the OJT process in the first quarter of 2017 to the second quarter of 2018 show that the proportion of sick children treated, according to the national protocol as captured in the records¹⁸ in MCSP-supported districts, increased from 53% to 85% compared to the national average increase from 55% to 72% during the same period.

The data in Figure 4 suggest that the uptake did not immediately happen after the completion of the LDHF training. Potential reasons include the time needed to build providers' self-confidence to use IMCI protocol through consecutive mentorship visits, to ensure registers and other IMCI tools are consistently available, and to properly organize the patient flows, staff schedules, task assignments and other organizational issues in the health facilities. By empowering the LDHF-trained providers as facility peer mentors to support their peers during the OJT process, they further strengthened their clinical skills and mastery of the IMCI protocol, and the overall autonomy of the health facility.

¹⁸ The "proportion of sick children treated according to the national protocol" is an indicator routinely reported through the national HMIS. It is intended to monitor the quality of care in case management of sick children. The numerator is the number of sick children managed using the IMCI booklet or IMCI register (whether the classification and/or treatment were correct or not), while the denominator is the total number of sick children seeking for care at the health facility (including those seen by non-trained providers),

Figure 4: Trends in percentage of children treated according to IMCI protocol according to HMIS reports



Source: DHIS2 system of the Rwanda National HMIS

5. Budget considerations

A brief review of MCSP’s expense records shows that the average expense per trainee for LDHF was \$313 per trainee. The average cost per person trained by OJT was \$106 per trainee. For OJT, district mentors used a half day during monthly mentorship visits at health centers to support OJT. Even if the mentorship allowances during the 7-month process are fully included in the cost estimate, the records shows an expense of RWF 53,329,000 – approximately \$66,412 – to train 626 providers, an average of \$106 per trainee.

Similar analyses were performed during the USAID’s Maternal and Child Health Integrated Program (MCHIP) program in 2011-2012. At that time, the cost of the original 11-day IMCI training model was estimated at a minimum of \$978 per trainee¹⁹, compared to an average of \$513 for a streamlined 6-day model developed and implemented by the MOH and MCHIP²⁰. Figure 5 represents the cost of respective models according to financial records from MCHIP and MCSP.

LDHF and OJT were organized locally, allowing trainees to return home each day, saving substantially on accommodation costs. In addition, local trainers and mentors were used, in contrast to previous IMCI training models organized in large regional hospitals or in Kigali city, involving an external course director and multiple experts.

¹⁹ Comparable to training costs in documented programs from other countries

²⁰ USAID’s Maternal and Child Health Integrated Program (2013), Promising and Best Practices for Child Survival in Rwanda, Contribution of the MCHIP Ikiraro Project, Jan 2011-July 2012

Figure 5: Average expense per participant in IMCI classic trainings (11-Day Original course, 6-Day Reduced course supported by MCHIP in 2011-2012) compared to the new models supported by MCSP in 2016-2018 (LDHF and On-the-Job Training) in Rwanda



Source: MCHIP field budgeting 2011-2012 and MCSP field budgeting 2016-2018 including venue, travel and training materials (all training costs are included except training preparation costs)

Discussion and Lessons Learned

Limited availability of funds and increasing workload for healthcare workers make traditional classroom-based approaches impractical for large-scale clinical provider training. Alternative models that are low-cost and minimize absences in health facilities are needed for comprehensive capacity building of the healthcare worker force. The experience of MCSP Rwanda in scaling up IMCI training using LDHF and OJT models in 10 health districts demonstrates that using blended training models and computer-assisted learning is cost-effective if coupled with clinical practice and supported by consistent mentorship. The following are some lessons learned through this process:

I. Decentralization of capacity building is the way forward

IMCI capacity building has always relied on a handful of national trainers located in the capital city Kigali, therefore, IMCI experts were initially skeptical about the use of local capacity for training. The concept of peer-to-peer training and mentorship was relatively new in Rwandan health facility settings.

The constant search for innovative approaches in Rwanda, coupled with consistent support given by the MOH, effective communication with stakeholders and quality technical assistance from MCSP helped consolidate this decentralized clinical training and mentorship approach. Today, MCSP's child health training and mentorship model utilizing the LDHF and OJT approaches is regarded as exceptionally effective in building capacity of a large number of providers at low cost and within a reasonable amount of time.

“Based on how IMCI was previously structured, decentralization of the training from national to district level was not obvious! However, after the training of district level mentors, we saw the potential of decentralization. The MOH priority is to reach the highest number of providers and from the numbers you have showed us, this objective was achieved. Also, classic off-site trainings are expensive and the MOH policy is to encourage approaches that reach the highest number of providers such as on-job training and the use of e-learning facilities such as ICATT for IMCI.”

Child Health Specialist at the MCCH Division/Rwanda Biomedical Center

Decentralization also allowed MCSP to train more health providers and staff in IMCI guidelines, giving the health centers more autonomy to treat sick children. Strengthening health centers strengthened the larger health system as a whole.

2. Ownership at the health center level is paramount for success

Previously, insufficient attention was given to fully empower the heads of health centers (known as *titulaires*) in capacity-building efforts because they do not provide clinical services on a daily basis. MCSP identified an opportunity to provide them with an overview to IMCI and immunization through a 2-day training using the WHO health workers guide to IMCI and immunization. The training dramatically improved their understanding of IMCI and built their self-confidence in supporting staff. Engaging the *titulaires* in this way had a positive impact on the smooth implementation of IMCI mentorship and supervision and on the performance of IMCI services in general.

“We supervise IMCI and immunization services. The training helped me a lot. Even yesterday, I was using IMCI, coaching my staff on case management and showing them how to properly fill in IMCI registers”

Titulaire of Gituza Health Center, Gatsibo district

3. Regular care providers can be empowered to become very effective peer-mentors.

Following LDHF trainings, providers trained in IMCI were not able to make a tangible impact on the proportion of sick children managed according to the national protocol in health facilities, as seen in Figure 4. This confirms that training alone is not sufficient to make a meaningful difference in performance. Self-confidence, sustained motivation, and an enabling environment which includes mentorship are also necessary.

“Most of our colleagues were not familiar with IMCI. It is not easy to treat children. Based on how they attended sessions, our colleagues were motivated to learn and trusted our capacity to help them. There are still some who have not yet mastered all the skills in IMCI and we are continuing to support them. We have not stopped!”

–IMCI peer mentor from Simbi Health Center, Huye district

When providers were supported by a series of mentorship visits, the remaining barriers were addressed and they were able to turn knowledge into practice. They were also empowered to accompany their fellow providers as facility peer-mentors during the OJT program in neighboring health facilities. It was then that the impact could be seen. On the job teaching triggered the interest of these facility peer-mentors and reinforced their determination. In most cases, they demonstrated exceptional capacity in transferring competence to their peers.

4. Careful design, systematic testing and iterative learning are vital during any redesign process

- During this program, the whole process of implementation involved multiple cycles of thinking, implementing while learning, re-thinking, adjusting and rolling-out again. The following are some examples:
- Early LDHF training tools were just similar handbooks to those used in classic trainings. More adapted and user friendly tools were immediately developed after the first review, including a simplified session plan for facilitators and an exercise book for participants.
- Because the IMCI experts were initially reluctant to eliminate some processes in the classic training, the early LDHF model was a series of four sessions of three days each. A joint review of the first test quickly revealed that the model was too expensive and not sustainable, and that there was time misused in unnecessary details. Such review opened the opportunity for further streamlining.
- Multiple scenarios were developed and tested to define the optimal number of mentors per health facility. This included many iterative consultations with the *titulaires* and providers taking into consideration multiple parameters such as how long a mentor will spend in a health facility, and the level of effort required per mentor without jeopardizing their daily workload.

- The initial design of OJT did not include ICATT. The option of computer-based learning became seriously considered only after discovering that all health facilities in MCSP supported districts have computers, with an average of more than six computers per health facility.

5. Experiences from the field should be used to inform discussions at the national level

All designs, repackaging and consecutive adjustments made during this program received inputs from IMCI national experts, and were presented and approved by the National Child Health Technical Working Group (TWG). Since September 2015, MCSP co-chaired the TWG with the MOH, and it became the most active of the TWGs operating under the MOH as a result of MCSP's assistance.

The TWG is a platform of exchange between MOH and its partners. The group provides expertise and guidance to all actors operating in the field, monitors the status of child health indicators on a quarterly basis, encourages and supports health districts to improve performance in child health programs. The success of MCSP's approach for technical assistance was largely the result of strong national leadership, and importantly, the use of lessons learned from experiences in the field initiated discussions and informed decisions made at the national TWG meetings.

6. Program managers should always prepare to face implementation challenges

The following are examples of challenges encountered while MCSP redesigned the delivery of IMCI trainings in Rwanda.

First, there was a ***frequent turnover of mentors***. Among 56 district mentors identified among the best providers and initially trained, 11 had left the program by the end of September 2017. As a result, the OJT trainings were significantly delayed in some health facilities. Fortunately, most districts were able to fill the gap by assigning existing supervisors from the District Hospitals, with assistance from national level trainers, while MCSP helped train new mentors to replace those who left. Although this has constituted an additional challenge to the program, it is encouraging that the mentors who departed were equipped with enhanced skills and knowledge they can use in their new service locations.

Secondly, ***high workload in health facilities*** during trainings and mentorship prevented providers from taking full advantage of capacity-building opportunities. This challenge called for flexibility, strategic redesign, and mentor's creativity in daily problem-solving. It was confirmed that trainings over a longer period of time and limiting absences of providers to a few hours per week helped facilitate scheduling and organization of services.

Thirdly, the district team and MCSP experienced ***difficulties in using information and feedback from mentors' reports*** on a regular and timely basis. With a total of approximately 163 mentorship visits on a monthly basis, the capabilities for analysis that was put in place did not allow immediate feedback and prompt decision-making based on data, as initially planned. Empowering the district mentors themselves to make onsite decisions and local adjustments was the basis of the progress in the field, while deferred data analysis at the national level helped identify barriers that will be addressed in potential future design modifications.

Finally, ***low computer literacy of providers*** in rural health centers presented challenges to implementation of the ICATT courses. WHO estimates a total of 22 to 26 hours of computer time are required to complete the ICATT course,²¹ therefore under the MCSP model it was estimated trainees would spend 2 hours per week over 7 months for course completion. Our experience showed that it took much longer for our targeted providers to complete the course than the time we had originally anticipated. For some trainees, this was their first time using a computer and they struggled with the keyboard, mouse and navigating from window to window. Ensuring availability of computers and power sources was not enough, additional support in basic computer skills and elementary troubleshooting was needed and became a significant aspect of the mentors' work. Question remains whether the same providers would be more computer-competent if given the chance to do another computer-based training.

²¹ <http://icatt-impactt.org/Help/FAQs>

Recommendations

In order to ensure long-lasting impact of MCSP's achievements over its three years of intervention on IMCI capacity-building (October 2015 to September 2018), the following recommendations build on the foundation established by the MCSP program described in this case-study:

1. Maintain the momentum in MCSP's 10 supported districts

- *Support systems and follow-up activities for trained providers should be reinforced.* These include ensuring that regular mentorship and supervision are maintained and that the newly trained providers have access to all the tools they need to provide care according to the standard set by the training.
- *The heads of health facilities should be further supported in their efforts to motivate and support their respective staff.* This includes updated materials with technical knowledge in cutting-edge RMNCH interventions, capacity-building in data analysis and local use, skill-building in leadership, and adapted tools to locally identify and solve key priority bottlenecks.
- *Adequate human resources should be made consistently available to sustain the achievements.* Having an appropriate number of trained providers at the service-delivery point is not sufficient. There should also be skilled managers, mentors and supervisors equipped to provide regular support to trained providers.

2. Create stronger linkages between facility-based and community-based services

- *Linkages between facility-based and community-based services should be further reinforced.* Rwanda has implemented a successful model of iCCM countrywide, and the Rwandan MOH should continue its efforts to better involve the community health workers in discussions around quality improvement, data use for decision making and other aspects of child health care. In addition to the person in charge of community, all facility personnel - particularly those trained in IMCI - should play an increased role to support and motivate the community service providers.

3. Make smart adaptations to improve the model developed by MCSP and expand in other districts

- *Basic principles of simplicity, user-friendliness, cost-consciousness and focus on clinical practice should drive any future adaptations.* While IMCI is an evolving strategy, particularly at this time of global discussion to redesign its technical content, to integrate quality improvement processes, and to reconsider IMCI's target population, the above principles have proven to be highly valuable during our (MCHIP and MCSP's) eight year of experience in Rwanda (2011-2018).
- *Internal capacity-building efforts, based on peer-mentorship, organized and coordinated by health facilities should be promoted countrywide.* This has been proven to be the most efficient way to provide the necessary skills to a maximum number of providers in IMCI, and areas of services provisions.
- *The efforts to build the autonomy of the districts in capacity-building should be reinforced and expanded.* This will empower the decentralized divisions of MOH find effective and sustainable approaches for capacity-building, initiate innovation and learn from each other. By nurturing cross-learning among health districts and implementing partners, the national child health sub-Technical Working Group has an important role to play.

4. Better prepare the next generation of managers and providers

- *IMCI in pre-service training for doctors and nurses should be given priority.* While MCSP succeeded in reducing the cost of IMCI in-service training in Rwanda, in-service training remains an expensive undertaking complicated by high turnover of staff. Strategies to integrate priority RMNCH technical areas, including IMCI, in nursing and medical schools are worthwhile long-term investments.

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