End of Project Report
Uganda Routine Immunization Program

July 2014 to March 2019

Photo by Katie Holt / MCSP

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USAID's Maternal and Child Survival Program (MCSP)

The Maternal and Child Survival Program (MCSP) is a global, $560 million, 5-year cooperative agreement funded by the United States Agency for International Development (USAID) to introduce and support scale-up of high-impact health interventions among USAID's 25 maternal and child health priority countries, as well as other countries. The Program is focused on ensuring that all women, newborns and children most in need have equitable access to quality health care services to save lives. MCSP supports programming in maternal, newborn and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment.

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Acronyms and Abbreviations

CAPA	Catchment Area Planning and Action
CAO	Chief Administrative Officer
CDC	Communicable Disease Control
CLA	Collaboration, Learning and Adaptation
DHIS2	District Health Information System Version 2
EC	East Central (region of Uganda)
EPI	Expanded Program on Immunization
HUMC	Health Unit Management Committee
HSD	Health Sub-District
HW	Health Worker
IIP	Immunization in Practice
IP	Implementing Partners
JSI	John Snow Inc.
MCH	Maternal and Child Health
MCHIP	Maternal and Child Health Integrated Program
MCSP	Maternal and Child Survival Program
MNCH	Maternal, Newborn, and Child health
MOH	Ministry of Health
NCC	National Coordination Committee
NMS	National Medical Store
PCV	Pneumococcal Conjugate Vaccine
PDSA	Plan-Do-Study-Act cycles
PHC	Primary Health Care
PY	Program Year
QI	Quality Improvement
QRM	Quarterly Review Meetings
QWIT	Quality Work Improvement Teams
RDC	Residence District Commissioners
REC	Reaching Every Community/Child
REC-QI	Reaching Every Community/Child using Quality Improvement techniques
RED	Reaching Every District
RHITES	Regional Health Integration to Enhance Services in Uganda
RI	Routine Immunization
RMNCAH	Reproductive, Maternal, Newborn, Child and Adolescent Health
SMC	Senior Management Committee
SS	Supportive Supervision
SS4RI	Stronger Systems for Routine Immunization
SW	South West (region of Uganda)
TA	Technical Assistance
TWG	Technical Working Group
TWC	Technical Working Committee
UNEPI	Uganda National Expanded Programme for Immunisation
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
VHT	Village Health Team
WHO	World Health Organization

Acknowledgments

The MCSP Uganda team would like to acknowledge USAID Washington, USAID Uganda, and the close collaboration and contributions of the Republic of Uganda Ministry of Health (MOH) and the Uganda National Expanded Programme for Immunization (UNEPI). We would also like to thank the following eleven District local governments, namely Kanungu, Mitooma, Mbarara, Butebo, Pallisa, Bulambuli, Mayuge, Bushenyi, Ntungamo, Butaleja, and Kibuku for their leadership and collaboration. In addition, we would like to recognize the following USAID-supported projects who were central to the realization of MCSP's objectives. These include USAID Regional Health Integration to Enhance Services (RHITES) Southwest, RHITES East Central, and RHITES North Lango, and other technical partners including WHO and UNICEF.

Finally, the MCSP/Uganda team would like to acknowledge and thank our talented and hard-working staff in Uganda for their dedicated years of service. A full list of MCSP/Uganda team members, both those based in Uganda and in the home offices of the MCSP partners, can be found in Appendix F.

Executive Summary

Since 2010, global rates of childhood immunization coverage, as estimated by a third dose of pentavalent vaccine (DTP3), have plateaued at approximately 85%—below the global target of 90%. In Uganda, DTP3 coverage, as estimated by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), remained at 78% from 2012 to 2017[1] and this level was confirmed by the 2016 Demographic and Health Survey (DHS). Novel approaches have been needed to strengthen local immunization management capability to address obstacles, improve performance, and reach those populations underserved by immunization and other primary health care services.

In 2012, USAID/Kampala partnered with USAID's global flagship project, the Maternal and Child Health Integrated Program (MCHIP) to provide technical assistance to strengthen routine immunization (RI) in Uganda. MCHIP provided technical support to the Ministry of Health/Uganda National Expanded Programme on Immunization (MOH/UNEPI) and to five districts to operationalize Uganda's national Reaching Every Community/Child (REC) strategy by adding elements of quality improvement (QI), thereby creating the REC-QI approach. In July 2014, USAID/Uganda requested the Maternal and Child Survival Program (MCSP) to continue MCHIP's work by expanding to 11 additional districts and maintaining technical support to UNEPI at the national level. In late 2016, USAID requested MCSP to provide tailored child health technical assistance to the MOH at national level and to two of USAID's recently awarded Regional Health Integration to Enhance Services (RHITES) projects to identify, demonstrate, cost, and document a package of "essential" low-cost, high-impact child health interventions in four prioritized districts (or "demonstration districts") with the ultimate goal of contributing to a reduction in child mortality in the South West and East Central regions. MCSP's technical support for RI has been implemented in Uganda alongside the "Stronger Systems for Routine Immunization (SS4RI)" project, a five-year project awarded to JSI in 2014 by the Bill & Melinda Gates Foundation, which employs the same REC-QI methodology as MCSP but works in an additional 10 districts.

While Uganda was one of the first countries to introduce the Reaching Every District (RED) approach in 2004 and then update it to REC in 2007, its widespread use by districts and health facilities was limited by persistent operational challenges. For example, health workers found it very challenging to analyse their own data in order to prioritize problems and conduct detailed planning for service delivery. The innovation of applying QI concepts and tools to REC (termed "REC-QI") was designed to help UNEPI achieve its own goals for implementing REC by addressing those intractable problems. REC-QI is comprised of mutually reinforcing actions to build health personnel capacity with the goal of improving the management, delivery, and utilization of RI services at the subnational level. Its components include participatory microplanning; creation of health-facility level QI teams that include community members; institutionalization of monthly and quarterly performance review meetings at both health facility and district levels; reinforcement of district-led supportive supervision visits; and the use of RI data reviews to guide corrective actions.

MCSP's key RI accomplishments in Uganda included:

- Development and printing of the first-ever **Uganda Immunization Policy** in collaboration with MOH/UNEPI and other partners.
- **Institutionalization of REC-QI** concepts and lessons learned by incorporating them into key MOH/UNEPI documents used nationwide; these include the *'Immunization in Practice Uganda'* (IIP) which is the national reference manual for EPI; the revised "*Uganda Immunization Standards, 2nd Edition*," and the *'Immunization Module Content Guide'* for pre-service health workers training.
- **Dissemination of REC-QI innovations and learning** via REC-QI knowledge sharing meetings with MOH/UNEPI and other key stakeholders both in country and globally.

[1] Re-estimated by WHO/UNICEF in 2018 at 85% and retrospectively applied to years 2014-2017. WHO immunization monitoring database, accessed 1 November 2018.
http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=UGA

- Provision of technical assistance at both national and district levels for the **introduction of new vaccines**, including rotavirus vaccine, and Inactivated Polio Vaccine (IPV), and the switch from trivalent to bivalent Oral Polio Vaccine (tOPV to bOPV). MCSP also supported short-term technical assistance to MOH/UNEPI from a global tetanus expert.
- **Improvement in the quality of RI data** and its **use** for program decision-making at national and sub-national level in all 11 MCSP-supported districts.
- Incorporation of key elements of MCSP's innovative approach to facility-based microplanning into MOH/UNEPI tools that will be used for immunization nationwide by all partners. This approach applies quality improvement tools to build the capacity of health workers to systematically identify, analyse, and prioritize problems and test solutions. MCSP also assisted the MOH in adapting immunization microplanning to support planning more broadly through the development of a national guide on using **Catchment-Area Mapping and Planning for Action** for other RMNCAH interventions.
- **Engagement of local non-health stakeholders** in sub-national activities related to RI planning, implementation and monitoring in all 11 MCSP-supported districts; this work strengthened their understanding and local ownership of responsibility for immunization and leveraged their influence on the **allocation of local resources to support operational costs essential to the provision of RI services.**
- Strengthening of supportive supervision and integrated quarterly performance review meetings to increase the **use of data for action and reinforce linkages between the facility and community levels**.

Since 2015, the REC-QI approach has undergone iterative revisions based on active efforts by the MCSP team to continuously learn what has worked well, what worked less well and how to improve it to make it more effective and scalable. The incorporation of key REC-QI innovations, including health facility catchment area mapping and microplanning; non-health stakeholder engagement; and facility-level steps to improve data quality into Uganda's national guidelines, manuals, and tools will help ensure that their benefits extend beyond the 11 intervention districts directly supported by MCSP.

Additionally, more advocacy and action is needed at higher levels to address the broad health systems problems such as human resource management, last-mile vaccine distribution, and financing of operational costs, all of which affect immunization performance but are beyond the direct control of districts and health facilities to resolve. Despite these challenges, the REC-QI approach has produced promising results that suggest that the RI system in the MCSP-supported districts is stronger and now better able to meet the needs of the communities it serves. While these practices were designed to improve RI, their potential benefits extend beyond immunization. The broad sharing of MCSP's REC-QI innovations through the RMNCAH platforms that already exist at MOH will promote their adaptation to RMNCAH services beyond RI.

Introduction

Since 2010, global rates of childhood immunization coverage, as estimated by a third dose of pentavalent vaccine (DTP3), have plateaued at approximately 85%—below the global target of 90%. In Uganda, DTP3 coverage, as estimated by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), remained at 78% from 2012 to 2017[2] and this level was confirmed by the 2016 Demographic and Health Survey (DHS). Novel approaches have been needed to strengthen local immunization management capability to address obstacles, improve performance, and reach those populations underserved by immunization and other primary health care services.

In 2012, USAID/Kampala partnered with USAID's global flagship project, the Maternal and Child Health Integrated Program (MCHIP) to provide technical assistance to strengthen routine immunization (RI) in Uganda. MCHIP provided technical support to the Ministry of Health/Uganda National Expanded Programme on Immunization (MOH/UNEPI) and to five districts to operationalize Uganda's national Reaching Every Community/Child (REC) strategy by adding elements of quality improvement (QI), thereby creating the REC-QI approach. In July 2014, USAID/Uganda requested the Maternal and Child Survival Program (MCSP) to continue MCHIP's work by expanding to 11 additional districts and maintaining technical support to UNEPI at the national level. MCSP in Uganda had the following two primary objectives for RI:

1. To strengthen UNEPI's institutional/technical capacity to plan, coordinate, manage, and implement immunization activities at national level.
2. To improve district capacity to manage and coordinate the immunization program as guided by UNEPI leadership.

In late 2016, USAID requested MCSP to provide tailored child health technical assistance to the MOH and two of USAID's recently awarded RHITES projects to identify, demonstrate, cost, and document a package of "essential" low-cost, high-impact child health interventions in support of Uganda's Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) Sharpened Plan. MCSP's work in immunization has been implemented in Uganda alongside the "Stronger Systems for Routine Immunization" (SS4RI) project, a five-year project awarded to JSI in 2014 by the Bill & Melinda Gates Foundation, which employs the same REC-QI methodology as MCSP but has been implemented in an additional 10 districts.

MCSP has incorporated QI concepts and tools into the standard Reaching Every District (RED)/Community (REC) management approach[3]. While Uganda was one of the first countries to introduce the Reaching Every District (RED) approach in 2004 and then update it to REC in 2007, its widespread use by districts and health facilities was limited by persistent operational challenges. For example, health workers found it very challenging to analyse their own data in order to prioritize problems and conduct detailed planning of service delivery. The innovation of applying QI concepts and tools to REC (termed "REC-QI") was designed to help UNEPI achieve its own goals for implementing REC by addressing those intractable problems. Its components include participatory microplanning; creation of health-facility level QI teams that include community members; institutionalization of monthly and quarterly performance review meetings at both health facility and district levels; reinforcement of district-led supportive supervision visits; and the use of RI data reviews to guide corrective actions.

[2] Re-estimated by WHO/UNICEF in 2018 at 85% and retrospectively applied to years 2014-2017. WHO immunization monitoring database accessed 1 November 2018.
http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=UGA

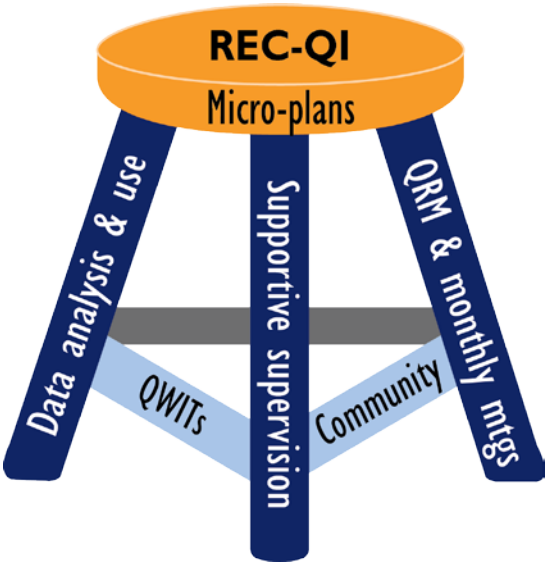
[3] Reaching Every District (RED) - A guide to increasing coverage and equity in all communities in the African Region:
https://afro.who.int/publications/reaching-every-district-red-guide-increasing-coverage-and-equity-all-communities

The key components of REC-QI include:

- Microplanning. Although UNEPI has required health facilities to prepare micro-plans for many years, few facilities had done so prior to REC-QI introduction. MCSP supported facilities to develop micro-plans, enhancing the utility of the standard microplanning process by adding:
  - participatory community mapping to accurately identify catchment populations
  - root cause and fishbone analyses to identify the underlying causes of problems
  - Pareto analysis, which prioritizes problems having the highest impact[4]
  - Plan-Do-Study-Act (PDSA) cycles to test solutions crafted by health workers and community members working together
- Quality Work Improvement Teams (QWITs). Comprised of health workers and community members, QWITs focus on immunization and conduct PDSA cycles, trace defaulters, and obtain community input on optimal location and time for vaccination outreach sessions.
- Data Use. In addition to root cause and fishbone analyses, MCSP's work included introducing data quality self-assessment and improvement and building health worker capacity to monitor immunization coverage and drop-out rates to inform their own actions.
- Supportive Supervision. MCSP revised existing supportive supervision tools to increase the focus on health worker capacity building and on-site mentorship, particularly for data analysis and problem-solving. Supportive supervision visits were conducted by MCSP staff plus local health staff and non-health stakeholders (NHS).
- Quarterly Review Meetings (QRMs). These meetings are held with both health personnel and local NHS (described below) to review performance and "think outside the box" to problem-solve, mobilize local resources, and flag problems needing national level attention.

The collective REC-QI inputs, when coupled with such critical system inputs as sufficient vaccines and other supplies, human resources, transportation, and cold chain equipment, are intended to strengthen the RI system in several ways. These include by improving planning of immunization sessions, identifying and providing services to underserved communities, increasing the quality and completeness of immunization data, which, in turn, is expected to contribute to uniformly high and equitable immunization coverage. See Figure 1 below for MCSP's conceptual framework.

Figure 1. Key Elements of REC-QI that Lead to Improved Quality of Management and Equitable Services.

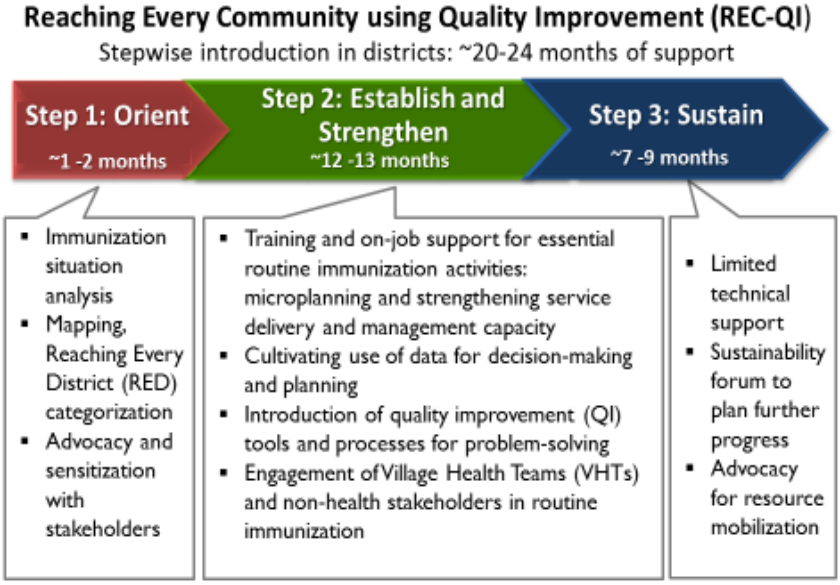


1. **Mapping** that supports microplanning (a key step in district and facility planning)
2. **Data analysis and use** (routine Data Quality Self-Assessment & Improvement (DQS&I)
3. **Supportive supervision**
4. **Quarterly review meetings** (QRMs) with non-health stakeholders (NHS), including civic and community leaders
5. **RI Quality Work Improvement Teams** (QWITs) with community

[4] See, for example: https://www.urc-chs.com/sites/default/files/AModernParadigm.pdf, page 72-73.

With technical support from a small MCSP team of two district technical officers and two national-level staff who worked in tandem with national, district, and health sub-district MOH personnel, MCSP introduced and facilitated the full implementation of the REC-QI approach shown in Figure 2 to approximately 400 facilities in 11 districts across four regions of Uganda.[5] The REC-QI introduction and implementation process extended over a period of 20-24 months per district with a gradual reduction in technical and financial support for implementation in the final months (the "Sustain phase").

Figure 2. Introduction of the REC-QI approach at district level.



A key focus of MCSP's support was to leverage existing district structures and resources so that REC-QI practices could be maintained even after direct support from the Program ended. This vision was grounded on the principle of developing the capacity of the health workforce at district, health sub-district, and health facility levels, and it extended to the engagement of NHS, such as local civil authorities and politicians, whose support and resource allocation decisions directly affected the provision of immunization services.

[5] REC-QI has been introduced in 10 additional districts with support from the Bill & Melinda Gates Foundation through the Stronger Systems for Routine Immunization project, 2014-2019 and had previously been introduced in another five districts under the USAID-supported Maternal and Child Health Integrated Program in 2012-2014.

Major Accomplishments

Objective 1: To strengthen MOH/UNEPI's institutional/technical capacity to plan, coordinate, manage, and implement immunization activities at national level

Development of Uganda Immunization Policy

In 2014, MCSP, in collaboration with other partners, supported the MOH/UNEPI to develop the first-ever Uganda Immunization Policy and printed over 600 copies to facilitate its official dissemination in 2015. The National Immunization Policy was instrumental in ensuring that immunization is mainstreamed into the national development agenda, and provides the basis for sustainable financing of UNEPI. Because of the policy, the law that established central and district funding for immunization was established and continues to guide resource allocation for immunization.

Institutionalization of REC-QI Lessons Learned

MCSP was a key player in supporting the MOH/UNEPI in the development of six national guidelines, manuals, and/or tools; these included the incorporation of key REC-QI concepts and lessons learned. MCSP:

- Supported the review, updating, printing and country-wide dissemination of a 12-year old version of the Immunization in Practice (IIP) Manual, which is a reference manual for both pre- and in-service EPI training. MCSP printed 2,000 copies, which were distributed to all health facilities in the country.
- Supported the review and updating of the national EPI standards, which provide benchmarks for uniformity of services countrywide and work as standard operating procedures for the national routine immunization program. The updates supported by MCSP incorporated newly introduced vaccines, technologies and approaches to align with international standards.
- Played a leading role in the adaptation of the WHO EPI prototype curriculum for pre-service training to streamline and standardize EPI pre-service training and examinations and minimize the skills gaps previously found with newly qualified health workers. The new curriculum was reviewed and approved by the MOH Senior Management Committee and the Ministry of Education & Sports, and awaits inputs and approval by the Human Resource and Development Technical Working Group (HRD TWG), including the professional councils that will forward the curriculum to the Ministry of Education and Sports for use in health training institutions country-wide.
- Supported UNEPI and the MOH Department of Health Information (DHI) to incorporate the "Enhanced RED Categorization Tool"[6] into the MOH district health information system version 2 (DHIS2) database, which is accessible online, to allow managers at all levels to instantly access information about their health facilities/districts and country for decision-making purposes.
- Supported the adaptation of REC into RMNCAH by developing a Catchment Area Planning and Action (CAPA) guide that incorporates lessons from the use of REC for routine immunization. The guide supports government-led planning and local resource mobilization for self-reliance.
- Documented experiences and lessons learned from supporting districts to implement the REC-QI health facility microplanning process by creating user-friendly microplanning tools and a guide on how to prepare them. The final version of this Microplanning Toolkit is being adapted by UNEPI for country-wide use.

[6] The Enhanced RED Categorization Tool is an improved RED categorization tool that enables EPI managers at all levels of care to access EPI coverage up to individual health facility level. In addition, the Enhanced RED Categorization Tool is equipped with extra functions (e.g. EPI monitoring charts) so managers can access this information anytime for decision-making. It is linked to DHIS2 so that EPI data routinely submitted by health facilities through DHIS2 directly feeds into the Tool.

Dissemination of REC-QI Innovations and Learning

MCSP held several REC-QI knowledge-sharing meetings with UNEPI and other key stakeholders both in country and globally, including a REC-QI side meeting at the WHO East and Southern Africa (ESARO) EPI Managers' Meeting in Kampala in 2017 for global EPI partners, MOH, technical staff from various East and Southern African countries, USAID/Washington, and the Bill & Melinda Gates Foundation. MCSP organized another knowledge-sharing meeting in country in 2017, where MCSP shared experiences from supporting the microplanning process with key RI partners. During this meeting, a commitment was made by all RI partners to adapt the MCSP approach for REC microplanning. Finally, in 2018, MCSP held a knowledge-sharing meeting with USAID's RHITES partners to disseminate REC-QI lessons learned, innovations, and strategies both for RI and for adaptation to child health. The RHITES partners incorporated activities related to these lessons learned into their annual work plans.

Introduction of New Vaccines

At both national and district levels, MCSP provided technical assistance in MCSP-supported districts for the introduction of rotavirus vaccine, and Inactivated Polio Vaccine (IPV), and also the switch from trivalent to bivalent Oral Polio Vaccine (tOPV to bOPV). MCSP also supported a global tetanus expert to travel to Uganda to identify and analyze the operational issues in Uganda that would impact both the switch from Tetanus Toxoid (TT) to Tetanus diphtheria (Td) vaccine; and implementation of a six-dose life-course vaccination schedule for tetanus and diphtheria, as recommended by WHO. Actually, TT to Td switch has already been done smoothly and the program now uses Td for women of child bearing age. As a result of MCSP support, some of the lessons learned (e.g., micro-mapping of villages and schools to service points) has been scaled up and there is a process underway for REC-QI to be used to enhance microplanning during the introduction of the Measles-Rubella Vaccine.

Strengthening of RI Data Quality and Its Use for Decision-Making

MCSP supported UNEPI to develop and print five semi-annual newspaper pullout sections that shared district-specific immunization program performance data with districts, policy makers, other key MOH stakeholders, and the lay public (see Figure 3). The newspaper pullouts have included such information about the new national immunization policy and guidance for districts on how to respond to measles outbreaks. These newspaper pullouts have elicited swift and appropriate action from policy makers when poor performance was reported, and led to harmonization of district and national level data.

Figure 3. Published Newspaper pullout on Immunization, 2018


March 2018

IMMUNIZATION

2017 NEWSPAPER PULLOUT ON IMMUNIZATION

UGANDA'S IMMUNIZATION ACT 2016 HIGHLIGHTS

Calls out for specific provisions to enable protection of Ugandans

INTRODUCTION

Vaccines are among the greatest and most cost effective health interventions in history, saving lives and resources at the same time. The benefits of immunization include the most obvious ones of preventing vaccine preventable diseases like measles, polio, tetanus, cervical cancer, polio, tuberculosis, diphtheria, and other diseases, preventing healthcare costs of treatment, and ensuring a healthy and productive population, among others. Immunization contributes to the Ministry of Health's Vision for a healthy and productive population that contributes to Uganda's economic growth and national development.

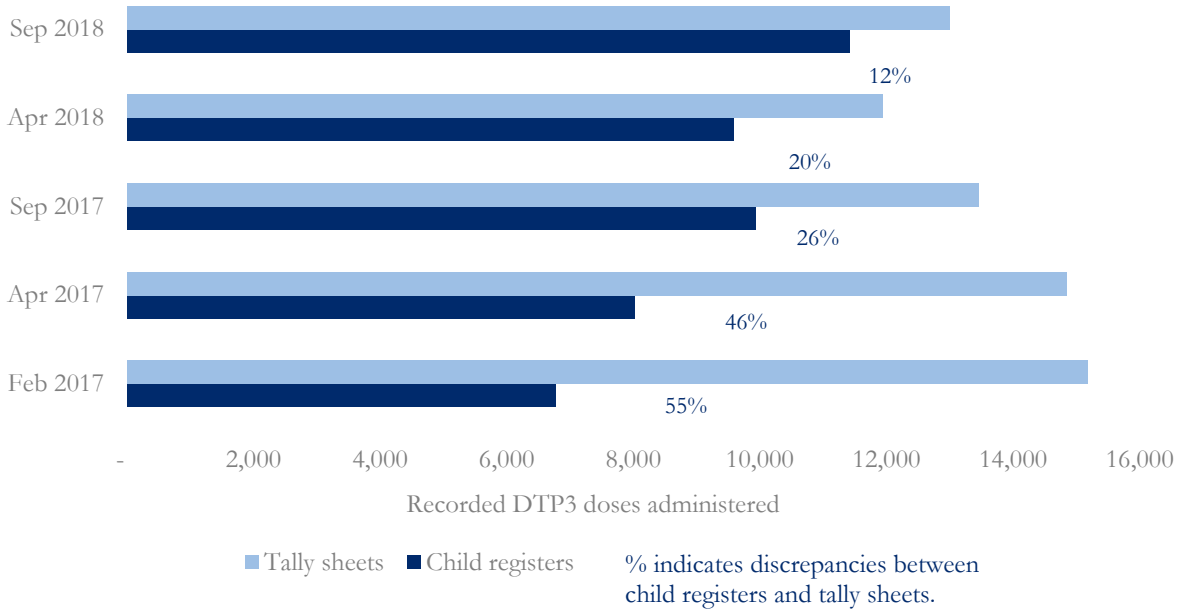
In line with this Vision, Uganda has sustained traditional vaccines and has worked with partners to introduce a number of new vaccines to increase protection of Uganda's population from more diseases.

Uganda is one of the pioneer countries in the African region to reach this remarkable milestone in the bid to strengthen Immunization. In addition, the Immunization Act was enacted into law in 2016. The act aims to enforce immunization of children, women of reproductive age and other target groups against immunizable diseases, to establish an immunization fund and to provide for other incidental matters.

MSCP supported all 11 districts to introduce practices to improve data quality improvement including data quality self-assessment, reconciliation of data at the end of each routine immunization session, and reorganizing name-based child registers by village and encouraging their use to track and follow-up children. MCSP built the capacity of health personnel in these 11 districts to continuously analyze and use their data for action at all levels by making use of facility-level monitoring charts on vaccine doses administered and the enhanced RED categorization tool for determining routine immunization performance at all levels. Due to these efforts, discrepancies in the data reported in the different data collection tools at health facility level (e.g., the child register and tally sheets) have declined across all 11 districts. Figure 4 shows improvements in data quality in the PY3 districts (Mbarara, Bushenyi, Pallisa and Mayuge) from baseline to endline. The baseline and endline data came from the regular monitoring system. The program conducted record review and data collection in all HFs in the MCSP district every six months to monitor performance

and report to USAID. The data discrepancies reported in the various collection tools at the health facility level (e.g., child registers and tally sheets) reduced from 55% at baseline in February 2017 to 12% at endline in September 2018.

Figure 4. MCSP data improvement strategies reduced the discrepancies between doses administered as reported in child registers and tally sheets in four districts (Mbarara, Bushenyi, Pallisa, Mayuge).



Data source: program monitoring data

National Adoption of MCSP's Microplanning and Catchment-Area Mapping

MCSP's innovative approach to facility-based microplanning applies quality improvement tools to systematically identify, analyze, and prioritize problems and test solutions. The final version the "*Microplanning for Routine Immunization in Uganda; First Edition, 2019*" is being adapted by UNEPI for country-wide use by all EPI stakeholders. MCSP's support to staff in over 400 health facilities in 11 districts has built their capacity to carry out detailed, facility-level microplanning to improve access and quality of routine immunization services. This has helped advance equity and increase the number of children vaccinated. For example, in the four districts that MCSP began supporting in PY3 (October 2016-September 2017) an additional 644 villages were reached with RI services and approximately 323,000 children received a third dose of pentavalent vaccine in the 11 supported districts. The MOH also expressed interest in adopting MCSP's approach for mapping catchment area populations to strengthen the broader scope of RMNCAH. MCSP provided technical assistance to the MOH to develop a National Guide on Using Catchment-Area Mapping and Planning for Action for other RMNCAH interventions. Once finalized, this document will serve to improve prioritization, planning, equitable access, and community participation for RMNCAH services, thereby facilitating implementation of the Government of Uganda's Sharpened Plan for RMNCAH services. The MOH plans to roll out Catchment-Area Mapping and Planning for Action process in 75 out of 112 districts (67%), with support from the World Bank's Global Financing Facility for Every Woman Every Child.

Promotion of Peer Learning and Mobilization of Local Resources

MCSP, together with SS4RI, recognized a gap in involving NHS in immunization and their potential to significantly influence the allocation of local resources for RI. MCSP therefore, engaged NHS in all MCSP-supported districts involving them in all of the subnational activities related to RI planning, implementation and monitoring. To facilitate cross learning, MCSP successfully conducted two rounds (in October 2017 and July 2018) of the District Leaders' Forum (DLF) meeting that brought together the District Chief Administrative Officers (CAO), Resident District Commissioner (RDC), Secretary for Health and District Health Officers (DHOs) for all MCSP and SS4RI-supported districts. At the October 2017 meeting, every district team reviewed their district's performance and shared experiences and lessons learned with other district leaders. At the closure of the meeting, the district leaders made commitments to support and improve RI in their districts, which were honored by MOH and later disseminated in a MOH circular to all of the participating districts (see Figure 5).

Figure 5. Published District Leaders' Commitments to Support and Improve Routine Immunization in Uganda.

During the follow-on DLF meeting in July 2018, MCSP noted that districts have started implementing some of the actions indicated in the commitments document. This includes, for example, the signing of performance contracts for health facility managers, which was first started in Mbarara District and shared in the initial October 2017 meeting. Figure 6 details other examples of NHS mobilizing local resources for RI in MCSP-supported districts.

Figure 6. District leadership action to support RI

The Road to Self-Reliance: District Leaders Supporting RI

- Districts developing HF in-charge performance contracts with facility in-charges
- **Bulambuli:** NHS engagement resulted in re-purposing existing building into 6 HFs
- **Bushenyi:** District council passed by-law: district 1% and sub-county 5% of local revenue to supplement immunization
- **Mbarara:** Will hold bi-annual leadership forum for all HF in-charges with focus on human resources and monitoring resource utilization
- **Kanungu:** Resource mobilization from local private sector- motor cycle for immunization purchased
- **Mitooma:** CAO personally oversees vaccine distribution

Objective 2: To improve district capacity to manage and coordinate the immunization program as guided by UNEPI leadership.

Utilization of REC-QI to Improve Planning for RI

Districts were enrolled on MCSP support by program year (PY), i.e. Kanungu and Butaleja in PY1; Ntungamo, Mitooma, Bulambuli and Kibuku in PY2; Mbarara, Bushenyi, Mayuge and Pallisa in PY3 and Butebo in PY4, following its split from Pallisa in July 2017. The duration of MCSP support to each district to introduce REC-QI was between 20 to 24 months (see Figure 7). To facilitate the reach and linking of RI services with the

community, MCSP oriented 11,263 VHTs (4,634 Male, 6,629 Female) across all 11 districts. VHTs contributed to microplanning by identifying appropriate positions for outreach sessions plus villages that could be conveniently served by static and outreach sessions, in addition to registration of children in their catchment areas, mobilization of caretakers, and defaulter and left out tracing. Village registration of all eligible children for immunization helped to ascertain the target populations for each immunization service delivery point (both static and outreach), thus enabling health workers to monitor the performance of each immunization session as well as defaulter and left out tracing. To facilitate retrieval of information for returning children, defaulter and left out tracing, children were registered in the health facility-based Child Registers according to their village of residence. Training on health facility microplanning involving health facility staff, VHTs, and NHS significantly increased the proportion of health facilities with microplans in all 11 supported districts (see Figure 8).

Figure 7. Stages of REC-QI implementation in MCSP-supported districts by program year/quarter/month (April 2015 to December 2018).

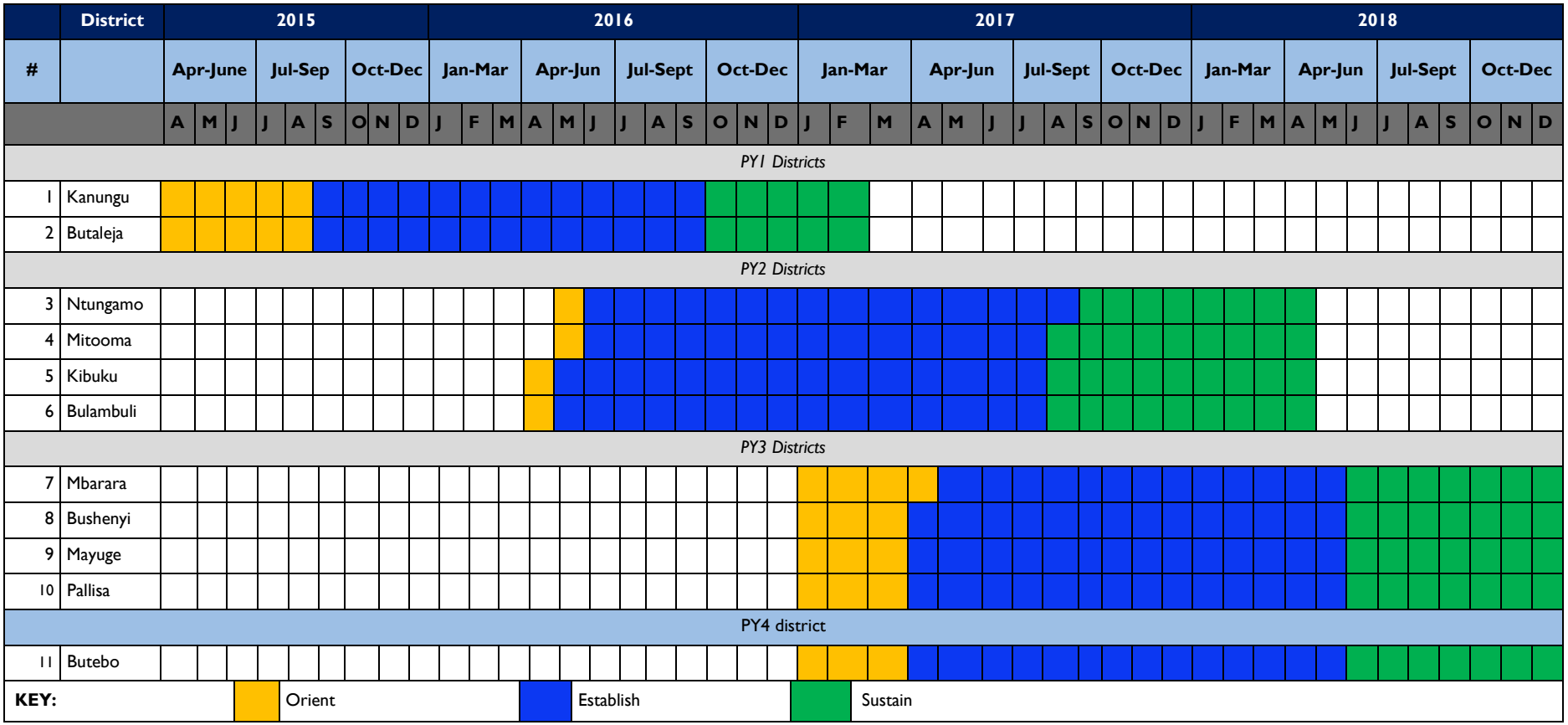
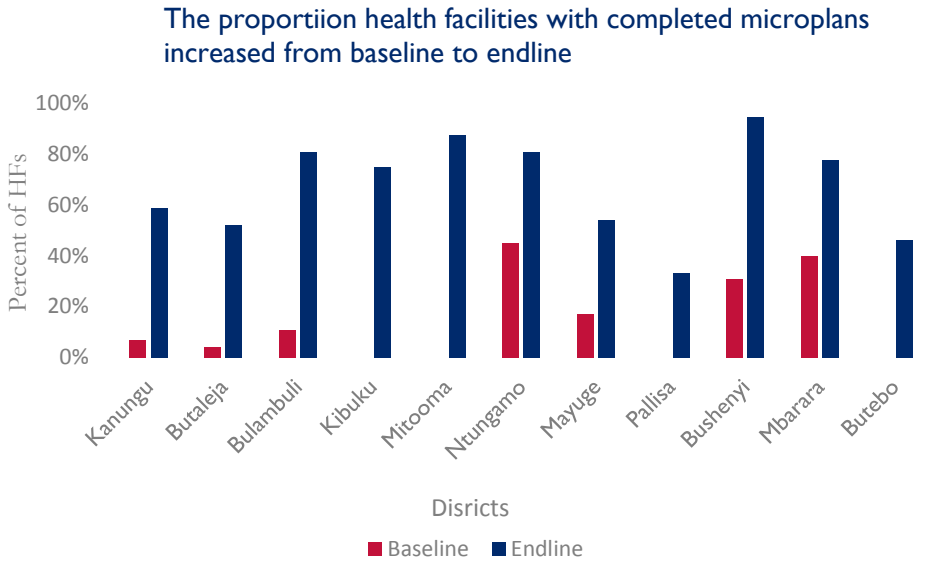


Figure 8. Proportion of health facilities with complete microplans in 11 MCSP-supported districts.



*PY1 districts (Kanungu and Butaleja): Baseline Oct'15 and end line Apr'17
*PY2 districts (Bulambuli, Kibuku, Mitooma and Ntungamo): Baseline Apr'16 and End line Apr'18
*PY3 districts (Mayuge, Pallisa, Bushenyi and Mbarara): Baseline Feb'17 and End line Sept'18
*PY4 district (Butebo): Baseline Feb'17 and End line Sept'18

Data source: program monitoring data

MCSP built the capacity of district and frontline health workers, through both classroom and onsite mentorship. MCSP adopted the Competency-Based Education and Training (CBET) approach, which focuses on strengthening the competencies of health workers to fulfill their routine roles and responsibilities. Operational Level (OPL) training of health workers using the revised IIP Manual was conducted for 432 operational level health workers (94 Male, 338 Female) in 9 out of the 11 districts to build their capacity in immunization service delivery and management. Unfortunately, the two districts of Kanungu and Butaleja did not receive this training as the IIP Manual was still under revision. At the end of MCSP's implementation in each district, a sustainability forum meeting was held with key RI stakeholders from the district to review their achievements and remaining challenges. Action plans were jointly developed with the district teams, focusing on sustaining what has been achieved and bridging the remaining gaps.

Strengthening of Supportive Supervision at Sub-National Level

MCSP supported integrated supportive supervision in the 11 districts (two rounds each year) that involved both the health workers and district leadership (both civic and political). Unlike previous supportive supervision visits that were implemented by district health management teams (DHMT) only, these rounds provided a platform for the DHMT and district civil leadership to interact and objectively focus on the prevailing challenges in the health facilities. In PY4, after identifying service delivery gaps that still existed in some of the MCSP-supported districts, the whole site engagement approach was developed as REC-QI's modified approach to supportive supervision.

From PY4 moving forward, the whole site engagement approach was used in the PY2 (Bulambuli, Kibuku, Ntungamo and Mitooma), PY3 (Bushenyi, Mbarara, Mayuge and Pallisa) and PY4 (Butebo) districts to conduct their final rounds of supportive supervision. The whole site engagement approach aimed to engage all health facility staff, together with NHS including the sub-county chiefs, parish chiefs, Local Council 111 chairperson, Secretary for Health and VHTs, in service delivery planning, performance analysis, progress review, and solution development and implementation to improve delivery of RI services. Using this approach, MCSP built the technical capacity of all of the health facility staff, strengthened their capacity to work as a team, and reduced performance gaps due to staff attrition, transfers and absenteeism. If an EPI Focal person was transferred to another department or another health facility, the replacement would

have been previously oriented on the RI system, and was therefore able to continue practicing the skills and knowledge gained during the training.

The engagement of NHS facilitated strong relationships between health facility staff and sub-county/community leaders, increased the transparency of and accountability for resources, promoted collective accountability for service delivery, and strengthened the leadership and management skills of district and health facility staff. In addition, this approach broadened the base of engagement, and reinforced the roles and responsibilities of civic and political leaders at the local government level. It created a platform for lobbying for additional local resources to supplement central government and partner funding, thereby furthering Uganda in its journey to self-reliance.

Facilitation of Linkages between Facilities and Communities with Integrated QRMs

MCSP supported each of the 11 districts to conduct two rounds of QRMs each year. These QRMs enabled the health facility and DHMTs to review their RI performance and progress in reaching unimmunized and under-immunized children. In addition, the QRM provided a platform for the districts to further discuss the alignment of the parish chiefs' agendas with that of the Health Unit Management Committees (HUMC). To enhance program ownership and the generation of context-specific solutions, MCSP shifted QRMs from the health sub-district level to the individual health facility level bringing the process closer to the point where services are delivered. This new approach enabled the participation of parish chiefs, HUMC and VHTs, who are the key decision-makers in the community and facilitate linkages between the facilities, communities, and sub-counties.

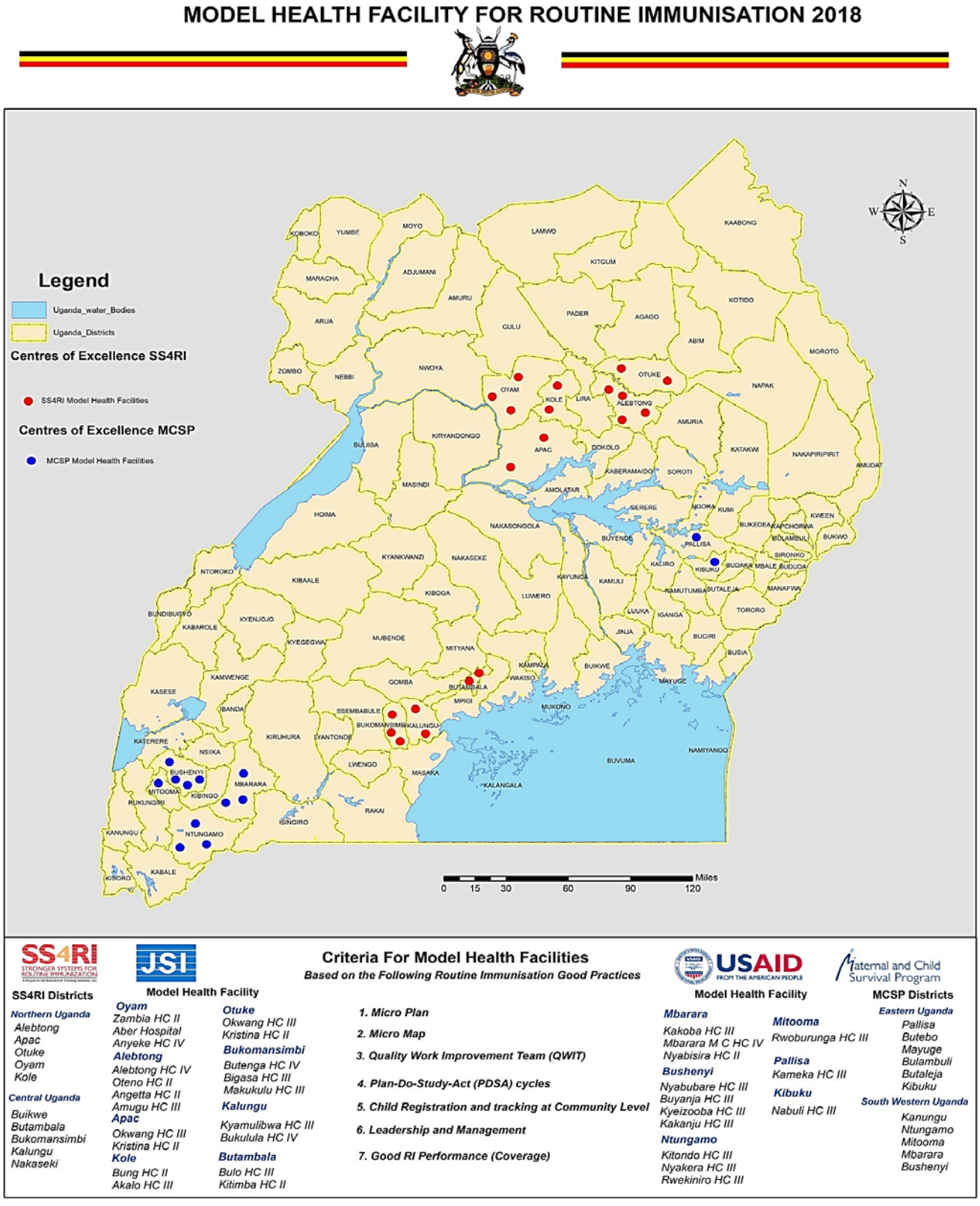
Strengthening of RI Data Quality at Sub-National Level

MSCP supported all 11 districts to strengthen their data quality improvement practices, including data quality self-assessment, reconciliation of data at the end of each RI session, and use of the child registers that were organized by village to ease the tracking and follow-up of children. MCSP also supported the districts to continuously analyze their data and use it for action at all levels, by making use of the RED tools, including monitoring charts for antigens administered and the RED categorization tool for determining RI performance at all levels. Figure 8 shows improvements in data quality in the PY3 districts (Mbarara, Bushenyi, Pallisa and Mayuge) from baseline to endline. The baseline and endline data came from the regular monitoring system. The program conducted record review and data collection in all health facilities in the MCSP district every six months to monitor performance and report to USAID. The data discrepancies reported in the various collection tools at the health facility level (e.g., child registers and tally sheets) reduced from 55% at baseline in February 2017, to 12% at endline in September 2018.

Establishment of Model Health Facilities to Foster Peer-to-Peer Learning

As one of the strategies to support sustained good performance in RI, MCSP supported the PY2 (Ntungamo, Mitooma, Bulambuli and Kibuku), PY3 (Mbarara, Bushenyi, Mayuge and Pallisa), and PY4 (Butebo) districts to identify and establish model health facilities to foster peer-to-peer learning and continuity of REC-QI practices after MCSP closes. Thirteen model health facilities were chosen based on selection criteria that included good health facility performance according to the RED Categorization Tool, implementation of all REC-QI key processes, evidence of tracking children for RI, and strong leadership and management skills. MCSP mentored at least two staff per selected model health facility, who in turn, provided leadership and management mentorship to other health facility managers that regularly visited their model health facility. Figure 9 is a map of the established model health facilities in the MCSP and SS4RI-supported districts. As a result of using this approach, the following positive trends were observed - improvement in vaccine management practices with timely quantification and ordering of vaccines; improved use of vaccines and injection materials; and enhanced Leadership, Management and Accountability (LMA) practices as outlined in the LMA section below.

Figure 9. Map of model health facilities, including 13 in MCSP-supported districts and 20 in SS4RI-supported districts.



Strengthening of Leadership, Management and Accountability (LMA) Skills of Health Managers

In reviewing program monitoring data, the MCSP team, observed that despite similar resources and support, some health facilities performed better than others. MCSP convened a meeting of health facility in-charges from better-performing facilities to identify the common leadership, management, and accountability practices that contributed to higher performance. The LMA practices by health facility managers that were identified included:

- Delegating management of primary health care (PHC) funds meant for RI to the EPI focal persons to facilitate RI services.
- Displaying quarterly PHC releases and breakdowns of how the funds will be used.
- Developing updated microplans and using them routinely.
- Holding monthly staff/QWIT meetings and discussing RI performance.
- Attending sub-county technical planning committee meetings that have engaged both civic and political leaders in RI activities and mobilized additional resources.
- Implementing innovations/changes to close existing RI gaps at both facility and community levels.

These cross-cutting LMA practices were used as the basis for orienting two health facility staff (the in-charge and the EPI focal person) in the MCSP-supported districts. These facility staff were followed-up through supportive supervision, onsite mentorship and coaching to reinforce the practices. To facilitate sustainability, model health facilities were established to provide facilities in a district for continuous peer-to-peer learning.

Application of Holistic Approach to Collaboration, Learning and Adaptation (CLA)

MCSP collaborated closely with implementing partners (IPs), including USAID RHITES projects in Southwest and East Central regions, not only to implement the MCSP Child Health program, but also to share experiences and tools and leverage resources, including telephones and airtime to follow up RI defaulters. MCSP also partnered with established Family Health support groups focused on antenatal care, facility delivery, postnatal care and infant/child nutrition, to promote the monitoring of pneumococcal conjugate vaccine (PCV) and measles vaccination among the groups' breastfeeding mothers in six sub-counties of Mbarara district. Additionally, MCSP established a 'WhatsApp' group of over 100 health facility personnel that support one another and facilitate continuous peer-to-peer learning in Mbarara, Bushenyi and Ntungamo districts. MCSP RI also tapped into RHITES SW-funded VHT meetings to train VHTs on child registration and mobilization for RI, as well as track progress on their efforts to trace and refer unimmunized children within their villages. In September 2018, MCSP held a meeting in Kampala at which RHITES implementing partners shared their lessons learned on adapting and adopting several practices, including: mapping of health facility catchment areas; non-health stakeholder engagement; delivery of a holistic child health package through Integrated Management of Neonatal and Childhood Illnesses (IMNCI); and use of such tools as the enhanced RED categorization tool to generate management information for health facility in-charges and DHMTs. These activities were incorporated into the RHITES SW and EC workplans to ensure their sustainability beyond MCSP.

A VHT checks a child health card for the immunization status of an infant during a RI mobilization visit in his village. Photo by Kate Holt/MCSP.

Cross-Cutting and Global Learning Themes

Table 1. Cross-cutting themes across MCSP RI program implementation

COMMUNITY HEALTH MCSP supported districts to mentor health facility staff in building capacity of and engaging/involving communities in immunization, either directly or through community representatives (VHTs and/or NHS) who are the gate keepers to the community. In addition, each health facility established a Quality Work Improvement Team (QWIT) that included community representatives to plan and monitor implementation/performance through regular meetings at health facilities. VHTs and NHS promoted health generally and EPI particularly in the community, monitoring its performance and ensuring accountability at district and health facilities. In addition to providing health messages to their communities, VHTs also registered all immunization eligible children and tracked left/drop outs to improve community health.	**EQUITY** To address disparities in access to EPI services, MCSP supported health facilities to identify and map all communities in a district to a specific health service delivery point. Through this process, communities that were formerly left out were identified and plans were made to reach them with services, through either static or outreach points. The child register was also re-organized according to the village of residence for each child, enabling health workers to pinpoint villages that were not accessing the service and lost-to-follow-up children and focus special efforts to reach them.	
HEALTH SYSTEMS STRENGTHENING MCSP, working with the MOH/UNEPI, other EPI partners and sub-national level health workers, examined key immunization processes (microplanning, supportive supervision, LMA, data quality and data use for action, community engagement) to identify gaps contributing to low performance and jointly develop innovative, context-appropriate local solutions. Through joint planning, implementation and monitoring, the three key actors, namely technical, civic, and political leaders, found themselves working and supporting each other to fulfill their responsibilities.	**HUMAN CAPACITY DEVELOPMENT** MCSP built the knowledge and skills of health workers through training, mentorship and coaching. Health facility in-charges were specifically targeted for training in LMA to enhance their capacity to plan, lead, manage and monitor the services delivered by their facilities. Bringing supervisors and supervisees to work together resulted in increased motivation on both parts and "thinking outside the box" to identify innovative solutions to service delivery challenges. Through exchange visits and the sharing of best practices, in-charges and EPI focal persons were exposed to	**INNOVATIONS** The REC-QI approach was an innovation in itself as it adds a QI component to the WHO RED/REC approach. Whereas classically QI has been used as a means of primarily improving the quality of clinical care, its application under MCSP was intended to improve the quality of sub-national management of a public health service (i.e., immunization). This included introducing health workers and community members to

experiences and lessons from other facilities, thereby creating a powerful peer-to-peer learning platform. The engagement of NHS built the capacity of sub-national leaders to understand the dynamics of the program, hence enabling them to supervise, monitor and fill the gaps that fall under their jurisdiction. The health facility in-charge was equipped with skills to engage with NHS at the sub-national level through regular reporting in the sub-county Technical Planning Committee and to solicit for additional resources to fill the gaps that the central government budget could not. In the process, sub-national leaders monitored the utilization of the resources they themselves had allocated, thereby helping to ensure accountability. The capacity of in-charges to use locally-generated data empowered them and promoted data driven decision-making at the sub-national level.

the process of problem-solving using PDSA cycles. Other innovations included:

- Introduction of PDSA cycles by health staff.
- Engagement of community leaders and other NHS in the process of mapping health facility catchment areas and service delivery points helped improve equity in the planning and provision of services.
- Introduction of whole site engagement in facility-level supportive supervision involved not just all staff at each facility but also NHS. This helped the latter to appreciate the challenges in RI and take on responsibilities to improve community mobilization, infrastructure strengthening, and funding.
- Conducting QRMs at sub-counties or health facilities brought the sub-county chiefs and parish chiefs into decision-making for RI. This encouraged them to address challenges appropriate to their roles (funding, personnel, infrastructure, community demand creation) leaving health staff to focus on technical challenges.
- Separation of child registers by village and the regular conduct of data validation after each vaccination session were innovations that helped improve data quality and use.

MEASUREMENT & DATA USE

MCSP supported strengthening of measurement and data use in the following ways:

QUALITY

MCSP applied QI to the MOH/UNEPI's REC strategy, thereby increasing its uptake and use. MCSP assisted each health facility in forming a QWIT focused on monitoring and improving immunization provided by

SCALE-UP

The first step in scaling up MCSP work was to incorporate the REC-QI approach into the national documents, manuals, and tools. This has ensured that the approaches will be applied

- Built the capacity of health personnel to regularly complete the name-based child health register and demonstrated its usefulness compared to relying solely on the immunization tally sheet whose data cannot be verified.
- Introduced the practice of separating the child health register according to villages of residence. This enabled health workers and village health volunteers to identify and trace children who were due for further vaccinations.
- Introduced health workers to a simple, routine process of Data Quality Self-Assessment and Improvement to harmonize and validate data at the end of each vaccination session.
- Built the capacity of health staff to regularly share and review their data during staff meetings as a means of understanding their performance, identifying problem areas, and generating ideas to improve them. The active involvement of staff in designing their own solutions motivated them to monitor their effect on performance.

the facility. The QI component was implemented in part, through the conduct of PDSA cycles by the health facility staff, increasing their ability to use their own data to problem solve, design solutions, and monitor how effective their solutions were by recording their effect in QI journals.

in districts beyond those directly supported by MCSP. The experiences and lessons learned have been documented in a number of materials that have been produced and disseminated widely[7]. MCSP has worked with USAID supported projects, such as RHITES SW and RHITES EC, to infuse some of these approaches into their workplans and operations. MCSP also collaborated with RHITES-North Lango to provide technical assistance and build the capacity of both its project staff and the district teams to utilize key REC-QI tools and concepts. Henceforth, these key REC-QI tools and concepts will be incorporated into future project work plans. MCSP has also engaged with WHO and UNICEF regarding the complementarity of REC-QI and REC, and with the goal of incorporating components of REC-QI into WHO/UNICEF work plans and documents. This will ensure that key aspects of the REC-QI approach are applied in districts beyond those directly supported by MCSP and SS4RI.

[7] Experiences and lessons learned from implementing the REC-QI approach were incorporated into the *"Immunization in Practice*" Manual, which was sent to all districts and health facilities nationwide, including pre-service training schools. Aspects of these REC-QI lessons learned were incorporated into the "*Uganda National Expanded Program on Immunization Standards, 2nd Edition*", which will also be printed and circulated to all the health facilities nationwide. Finally, REC-QI lessons learned were incorporated into the "*Microplanning for Routine Immunization in Uganda, 1st Edition*".

Recommendations and Way Forward

REC-QI is an implementation approach that builds the capacity of facility and district level personnel to implement the WHO/UNICEF RED strategy. Its concepts and tools provide concrete steps that both health workers and communities can use to identify, analyze, and prioritize problems and design solutions (largely using existing resources) to address the barriers to immunizing all children.

Since 2015, the REC-QI approach has undergone iterative revisions based on active efforts by the MCSP team to continuously learn what has worked well, what worked less well and how to improve the approach to make it more effective and scalable. Key REC-QI innovations, including health facility catchment-area mapping and microplanning; NHS engagement; health facility in-charges' LMA skills improvement; and facility-level steps to improve data quality, have been incorporated into Uganda's national guidelines, manuals, and tools to help ensure that their benefits extend beyond the 11 districts directly supported by MCSP.

The sustainability and scale-up of some REC-QI steps are still a work-in-progress and need further attention and institutionalization. For example, ensuring that VHTs (e.g., community health workers) record every child born in the child register and not just those children who came to the facility for an initial vaccination is a critical first step to assuring full immunization coverage for all children. Re-organizing the child registers by village to identify under-served communities and facilitating the tracing of those children due for vaccination are important steps to facilitate reaping the full equity benefits of REC-QI. However, the inclusion of these technical steps into MOH/UNEPI tools does not necessarily guarantee that they will be implemented on the ground. Further discussion with the MOH/UNEPI and other key stakeholders and available human and financial resources are needed to ensure that these tools are put to broad use. In line with USAID's CLA approach, MCSP widely shared key learnings and the evolution of the REC-QI approach with several country-level, regional and global partners to promote their adoption, adaptation, and implementation beyond the program. Some evidence indicates that UNICEF in Uganda is already scaling up some of these lessons, especially in relation to improving equity through MCSP's microplanning and catchment area mapping processes. USAID may consider using its existing programs to continue facilitating scale up of these practices and support the government of Uganda's goal to institutionalize them.

While MCSP designed and introduced REC-QI as a means of improving RI, most of its innovations are broadly applicable and can be adapted to improve coverage and equity for other RMNCAH interventions. MCSP's above-site technical assistance to RHITES EC, RHITES SW, and RHITES North Lango have demonstrated that such adaptation is feasible, supports integration, and improves service delivery. It is therefore, recommended that the REC-QI innovations be broadly shared through the RMNCAH platforms that already exist within the MOH to promote their application to other RMNCAH interventions.

During the project implementation period, districts continued to face challenges with cold chain and vaccine stock outs, delayed release of PHC funds for activities and improvements in data quality that may have impacted immunization coverage. Consequently, more advocacy and action are needed at higher levels to address broad health systems problems, including human resource management, last-mile vaccine distribution, and financing of operational costs, all of which affect immunization performance but are beyond the direct control of districts and health facilities to resolve. Despite these challenges, the REC-QI approach has produced promising results that suggest that the RI system in the MCSP-supported districts is stronger and now better able to meet the needs of the communities it serves.

Data quality issues continued to challenge reporting on coverage rates at all levels. That is why MCSP paid a great deal of attention to improving data quality of reported data. At the heart of MCSP is the theory that process improvements are critical to strengthening a system's ability to deliver immunization services

to every eligible person in the community. While some of the immediate results may take time to show up, or sometimes result in declining coverage as data quality improvement is enhanced, the need for continued system strengthening and institutionalization of these practices remain more relevant than ever.

Appendix A: Performance Monitoring Plan[8]

No	Indicators	Districts		Data source	Baseline	Annual Target	Achievement (%)					Comments
							PY1 2014/15	PY2 2015/16	PY3 2016/17	PY4 2017/18	End of project	
1	*Number of deaths in the U5 children per 1000 live births (context)*			UDHS	90 (2012)		-	-	64	-	64	UDHS is conducted every 5 years
2	*DTP 3 coverage nationwide*			MOH DHIS2	91%	90%	94%	92%	94%	92%	92%	This indicator was reported annually
3	*# of national level guidelines, manuals, and tools in which REC-QI concepts are incorporated (IP custom)*			Program reports	0		4	0	1	1	**6**	**Tools include:** REC-QI How to Guide, IIP Manual, RED categorization tool in MOH DHIS2, Microplanning tools, EPI standards, EPI Curriculum
4	*% MoH / UNEPI TWG coordination meetings held where Routine Immunization was discussed in a year (IP custom)*			Program reports	0%	100%	83%	92%	100%	73%	87%	MCSP participated in most meetings held during the project implementation period. Some of the EPI TWG meetings were not held due to national level priorities like new vaccine introduction.
5	*DPT 3 coverage by district*	PY1 districts	Kanungu	MOH DHIS2	111%	90%	111%	98%	86%	82.6%	82.6%	During the project implementation period, districts continued to face challenges with cold chain and vaccine stock outs,
			Butaleja		110%	90%	110%	83%	91%	79.0%	79%	
			Total		**111%**	**90%**	***101%***	***92%***	***88%***	***81%***	**81%**	
		PY2 districts										
			Ntungamo		80%	90%	-	80%	77%	76%	76%	

[8] Annual targets reflect targets set for the final year of the program for respective districts.
~ End of project achievements estimates:
For indicators presented as "%": the annual performance of the final year is reflected as EOP achievement.
For indicators presented as "numbers": the cumulative numbers over the life of project are presented as EOP achievement.
The EOP achievements for indicators presented as "%" correspond to the annual targets: The EOP achievements for indicators presented as "number" do not correspond to the annual targets

No	Indicators	Districts		Data source	Baseline	Annual Target	Achievement (%)					Comments
							PY1 2014/15	PY2 2015/16	PY3 2016/17	PY4 2017/18	End of project	
			Mitooma	MOH DHIS2	83%	90%	-	83%	68%	64%	64%	delayed release of PHC funds for activities and improvements in data quality that may have impacted immunization coverage. MCSP and other partners have also been working on improving data quality of reported data. The decline in coverage in some districts may also be a result of data quality improvement. Butebo was a newly created district taken on by MCSP during its final year of implementation; it was still in the process of building management and administrative structures by the time MCSP exited These gaps in the structures at the district affected implementation of activities.
			Kibuku		82%	90%	-	82%	89%	72%	72%	
			Bulambuli		69%	90%	-	69%	61%	69%	69%	
			Total		**79%**	**90%**	**-**	***79%***	***75%***	***72%***	**72%**	
		PY3 districts										
			Mbarara	MOH DHIS2	79%	90%	-	-	83%	72%	72%	
			Bushenyi		81%	90%	-	-	77%	79%	79%	
			Pallisa		58%	90%	-	-	90%	76%	76%	
			Mayuge		76%	90%	-	-	81%	71%	71%	
			Total		72%	90%	**-**	**-**	**83%**	***73%***	**73%**	
		PY4 district	Butebo	MOH DHIS2	103.3%	90%	**-**	**-**	-	***66%***	66%	
			Total		**103.3%**	**90%**	**-**	**-**	-	***66%***	**66%**	
6	*Number of children who at 12 months have received three doses of DPT/Penta vaccination from a USG-supported immunization program. (Standard 3.1.6 – 61)*	PY1 districts										During the project implementation period, districts continued to face challenges with cold chain and vaccine stock outs, delayed release of PHC funds for activities and improvements in data quality that may have impacted immunization coverage.
			Kanungu	MOH DHIS2	9,272	10,178	11,292	10,075	10,218	10,076	41,661	
			Butaleja		9,094	9,928	9,003	10,280	10,409	9,340	39,032	
			Total		18,366	20,106	***20,295***	***20,355***	***20,627***	***19,410***	***80,693***	
		PY2 districts										
			Ntungamo	MOH DHIS2	20,748	22,072	-	17,623	17,482	17,883	52,988	
			Mitooma		6,527	8,368	-	6,924	5,869	5,666	18,459	
			Kibuku		4,792	9,216	-	7,588	8,478	7,060	23,126	
			Bulambuli		5,811	7,961	-	5,462	4,988	5,810	16,260	
			Total		37,878	47,617	**-**	***37,597***	***36,817***	***36,419***	***110,833***	
		PY3 districts										
			Mbarara	MOH DHIS2	18,721	22,208	-	-	17,482	16,536	34,018	
			Bushenyi		8,207	11,016	-	-	5,869	8,976	14,845	
			Pallisa		8,617	18,180	-	-	8,478	8,095	16,573	
			Mayuge		18,767	22,236	-	-	4,988	16,172	21,160	

No	Indicators	Districts		Data source	Baseline	Annual Target	Achievement (%)					Comments
							PY1 2014/15	PY2 2015/16	PY3 2016/17	PY4 2017/18	End of project	
			Total		**54,312**	**73,640**	**-**	**-**	**36,817**	***49,779***	***86,596***	
		PY4 district	***Butebo***	MOH DHIS2	3,207	6,824	-	-	-	4,491	4,491	
			Total		**3,207**	**6,824**	**-**	**-**	**-**	**4,491**	***4,491***	
7	*% of planned RI sessions that were conducted in the year (IP custom)*	PY1 districts										During the project implementation period, districts continued to face challenges with cold chain and vaccine stock outs, delayed release of PHC funds for activities that affected implementation of planned RI sessions.
			Kanungu	HF assessment	0	91%	82.7%	76%	84%	-	84%	
			Butaleja		0	91%	89.0%	97%	102%	-	102%	
			Total		0	91%	***86.2%***	***83.9%***	***90%***	**-**	**90%**	
		PY2 districts										
			Ntungamo	HF assessment	0	91%	-	94%	86%	97.3%	97.3%	
			Mitooma		0	91%	-	78%	87%	91.6%	91.6%	
			Kibuku		0	91%	-	52%	70%	40.4%	40.4%	
			Bulambuli		0	91%	-	73%	59%	56.5%	56.5%	
			Total		**0**	**91%**	**-**	***78%***	***74%***	***65%***	***65%***	
		PY3 districts										
			Mbarara	HF assessment	0	91%	-	-	***81%***	90%	90%	
			Bushenyi		0	91%	-	-	***81%***	105%	105%	
			Pallisa		0	91%	-	-	***58%***	63%	63%	
			Mayuge		0	91%	-	-	***76%***	86%	86%	
			Total		0	91%	**-**	**-**	***73%***	***85%***	***85%***	
		PY4 district	Butebo	HF assessment	0	91%	**-**	**-**	**-**	52%	52%	
			Total		**0**	**91%**	**-**	**-**	**-**	***52%***	***52%***	
8	*Number of people trained in child health and nutrition through USG-supported programs (IP custom)*	PY1 districts										MCSP completed all planned training in PY1, PY2 and PY3 implementation phases and thus had no trainings planned in PY4. Trainings included VHT trainings, OPL trainings and REC-QI trainings, though no targets were set.
			Kanungu	Program reports	0	-	217	1,247	81	-	1,545	
			Butaleja		0	-	99	905	-	-	1,004	
			Total		0	-	***316***	***2,152***	***81***	**-**	2,549	
		PY2 districts										
			Ntungamo	Program reports	0	-	-	2,147	86	-	2,233	
			Mitooma		0	-	-	1,158	98	-	1,256	
			Kibuku		0	-	-	568	31	-	599	
			Bulambuli		0	-	-	2,676	39	-	2,715	
			Total		0		**-**	**6,549**	**254**	**-**	**6,803**	
		PY3 districts	Mbarara		0	-	-	-	1,695	-	1,695	No targets were set for trainings. Trainings conducted included VHT trainings, OPL trainings and
			Bushenyi		0	-	-	-	698	-	698	
			Pallisa		0	-	-	-	232	681	913	
			Mayuge		0	-	-	-	85	555	649	

No	Indicators	Districts		Data source	Baseline	Annual Target	Achievement (%)					Comments
							PY1 2014/15	PY2 2015/16	PY3 2016/17	PY4 2017/18	End of project	
			Total		0	-	**-**	**-**	***2,710***	***1,236***	**3,946**	REC-QI trainings for health workers.
		PY4 district	Butebo		0	-	**-**	**-**	**-**	438	438	
			Total		**0**	**-**	**-**	**-**	**-**	***438***	**438**	
9	*% of planned quarterly review/coordination meetings held where routine immunization was discussed in a district per year (IP custom)*	PY1 districts	Kanungu	District assessment	8.3%	100%	8%	50%	100%	-	100%	
			Butaleja		38%	100%	38%	25%	67%	-	67%	
			Total		20%	100%	***20%***	***40%***	***83%***	**-**	***83%***	
		PY2 districts	Ntungamo	District assessment	6%	100%	-	6%	89%	67%	67%	Some of the districts had delays in release of PHC funds coupled with reduction in allocated amounts for Pallisa district, which affected the implementation of planned quarterly review meetings. Annually, MCSP supported districts to conduct two rounds each of QRMs.
			Mitooma		0%	100%	-	0%	75%	33%	33%	
			Kibuku		0%	100%	-	0%	75%	67%	67%	
			Bulambuli		0%	100%	-	0%	100%	67%	67%	
			Total		**3%**	**100%**	**-**	***3%***	***81%***	***58%***	***58%***	
		PY3 districts	Mbarara	District assessment	0%	100%	**-**	**-**	***80%***	100%	100%	
			Bushenyi		0%	100%	**-**	**-**	***20%***	100%	100%	
			Pallisa		0%	100%	**-**	**-**	***33%***	75%	75%	
			Mayuge		0%	100%	**-**	**-**	***67%***	75%	75%	
			Total		**0%**	**100%**	**-**	**-**	***53%***	***88%***	***88%***	
		PY4 district	Butebo	District assessment	**0%**	**100%**	**-**	**-**	**-**	25%	25%	
			Total		**0%**	**100%**	**-**	**-**	**-**	***25%***	***25%***	
10	*% of planned integrated supportive supervision visits conducted in a district in a year (IP custom)*	PY1 districts	Kanungu	District assessment	17%	100%	17%	25%	100%	-	100%	Some of the districts had delays in release of PHC funds coupled with reduction in allocated amounts for Pallisa district, which affected the implementation of planned SS. Annually, MCSP supported districts to conduct two rounds each of SS.
			Butaleja		50%	100%	50%	13%	100%	-	100%	
			Total		**30%**	**100%**	***30%***	***20%***	***100%***	**-**	***100%***	
		PY2 districts	Ntungamo	District assessment	19%	100%	-	18.8%	75%	100%	100%	
			Mitooma		13%	100%	-	12.5%	100%	100%	100%	
			Kibuku		25%	100%	-	25%	100%	100%	100%	
			Bulambuli		13%	100%	-	13%	100%	67%	67%	
			Total		***18%***	***100%***	**-**	***18%***	***94%***	***92%***	***92%***	
		PY3 districts	Mbarara	District assessment	40%	100%	-	-	50%	100%	100%	
			Bushenyi		28%	100%	-	-	75%	100%	100%	
			Pallisa		42%	100%	-	-	75%	50%	50%	
			Mayuge		58%	100%	-	-	50%	100%	100%	
			Total		***42%***	***100%***	**-**	**-**	***63%***	***88%***	***88%***	

No	Indicators	Districts		Data source	Baseline	Annual Target	Achievement (%)					Comments
							PY1 2014/15	PY2 2015/16	PY3 2016/17	PY4 2017/18	End of project	
		PY4 district	Butebo	District assessment	**0%**	100%	-	-	-	25%	25%	
			Total		***0%***	***100%***	**-**	**-**	**-**	***25%***	***25%***	
11	*% of health facilities with complete REC micro-plans (IP custom)*	PY1 districts										Overall, districts embraced the microplanning process and continued to conduct the process annually. However, staff transfers, especially in Pallisa, affected completion of microplans during the last year of the project.
			Kanungu	HF assessment	7%	44%	7%	62%	-	-	62%	
			Butaleja		4%	44%	4%	88%	-	-	88%	
			Total		***6%***	***44%***	***6%***	***70%***	**-**	**-**	***70%***	
		PY2 districts										
			Ntungamo	HF assessment	46%	44%	-	46%	67%	81%	81%	
			Mitooma		0%	44%	-	0%	83%	88%	88%	
			Kibuku		0%	44%	-	0%	31%	75%	75%	
			Bulambuli		11%	44%	-	11%	63%	81%	81%	
			Total		***21%***	***44%***	**-**	***21%***	***63%***	***81%***	***81%***	
		PY3 districts										
			Mbarara	HF assessment	29%	44%	-	-	94%	78%	78%	
			Bushenyi		23%	44%	-	-	72%	94%	94%	
			Pallisa		0%	44%	-	-	50%	33%	33%	
			Mayuge		14%	44%	-	-	69%	54%	54%	
			Total		***17%***	***44%***	**-**	**-**	***75%***	***69%***	***69%***	
		PY4										
			Butebo		***0%***	44%	-	-	-	46%	46%	
			Total		***0%***	***44%***	**-**	**-**	**-**	***46.2%***	***46.2%***	

Appendix B: Success Stories

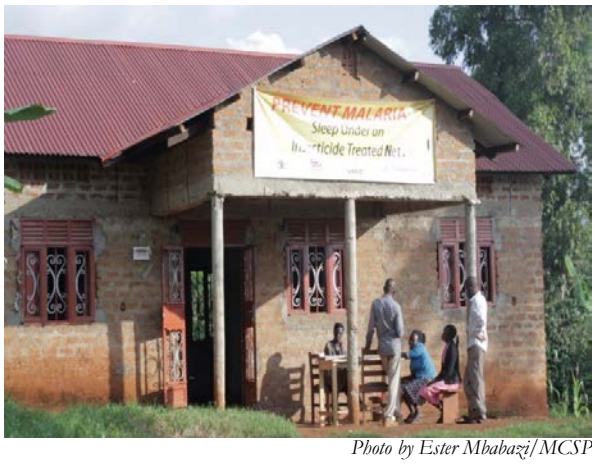


Photo by Ester Mbabazi/MCSP

Photo 1. Health officials visit Bulegeni Health Center, one of the six new health centers commissioned by the Ministry of Health to reach the underserved communities in Bulambuli District.

Bulambuli District: Doubling Service Reach through Participatory Mapping for Immunization and Other Health Services

Uganda's Bulambuli District is located on the side of Mount Elgon in Uganda's Eastern region. The steep terrain and long distances between communities and health facilities make this a challenging district to serve. In 2015, only 57% of infants received a first dose of pentavalent vaccine, which protects against five diseases; vaccination coverage for measles stood at 48%. In mid-2016, USAID's flagship Maternal and Child Survival Program (MCSP) was asked to provide technical assistance to help Bulambuli District pinpoint and address the root causes of the problems leading to low vaccination coverage. By working strategically with both health officials and civil and administrative authorities, MCSP helped Bulambuli to more than double its reach for immunization and other basic health services: from 340 villages in 2015 to 695 villages in 2017.

The key to MCSP's approach in Uganda is its application of tools from the field of quality improvement (QI) to Uganda's Expanded Programme on Immunisation, which uses a strategy called Reaching Every Community (REC). The MCSP approach, termed REC-QI, starts with participatory mapping of communities and their access to health facilities. MCSP convened health personnel, local civil and administrative authorities, politicians, and community leaders to assign parishes (groups of five to six villages) to specific health centers and outreach sites in the district. Together, they constructed a map that showed a startling finding: more than one-quarter (29%) of Bulambuli's population lived very far from any clinic or outreach site. Approximately 27 parishes and seven of the district's 19 sub-counties—a combined population of 53,084—had no health facilities at all. This meant that families with infants and small children had to travel at least eight kilometers to access basic preventive care, including immunization.

LOCATION

Bulambuli District, Uganda

SUMMARY

By adapting approaches for improving immunization reach and quality of care, the Maternal and Child Survival Program in Uganda supported Bulambuli District to expand immunization and other basic health services from 340 villages in 2015 to 695 villages in 2017.

The mapping process prompted Bulambuli's leadership to take action to give these underserved communities better access to health services. They tasked the administrations of six sub-counties to identify structures that could house new health facilities. The sub-county officials did so and worked with MCSP and other key officials to reallocate health workers to start providing health services at these new sites. But buildings and staff alone were not enough to provide health care. MCSP supported the sub-counties to formally apply to the Ministry of Health to commission the new facilities so that they would receive full benefits, including supplies of vaccines, drugs, and equipment. Since August 2017, the six new health centers—including a locally donated building, a former sub-county office, and a planned sub-county residence—have been open for business. Each is staffed with at least four trained health workers, assisted by village volunteers who offer immunization and other basic maternal, newborn, and child health services, both on-site and at nearby outreach sites. Access to care is now much easier in Bulambuli District. Mothers with infants walk no more than two kilometers to health facilities or outreach sites, and no longer incur out-of-pocket expenses of about US $5 for motorcycle taxi rides to obtain preventive immunization services, which are available free of charge. Following this development, DTP3 coverage in Bulambuli rose to 77%, and the vaccination dropout rate fell to only 1%.

"MCSP, through mapping, helped us to realize that 27 parishes (seven sub-counties) could not easily access life-saving immunization services. The statistics on the unreached population were startling and triggered district-led action that involved multiple stakeholders. With MCSP's support, we are now reaching 695 villages with immunization services, up from the 340 originally reached, as a result of these new health facilities. We've also actively engaged our lower level leaders in committing tangible resources to these new health facilities to ensure their functionality."

- Stephen Waniala,
Assistant District Health Officer

This experience showed Bulambuli district health officials the importance of using spatial data and working with local leaders to take action and commit resources to improve both access to and use of such essential services as immunization. MCSP has worked in 11 districts across four regions of Uganda to strengthen the capacity of health personnel to manage and deliver immunization services and involve local civil, administrative, and political leaders for necessary support.

By Bryan Tumusiime, Knowledge Management Advisor, MCSP Uganda

Photo by Kate Holt/MCSP

Photo 1. A health worker (at right) discussing routine immunization with a mother in his community.

NAME

Dan Ahimbisibwe

ROLE

Nursing Officer In-Charge

LOCATION

Kanungu District, Uganda

SUMMARY

When MCSP started supporting Kanungu District in 2015, only about half of the people in the Nyakashozi Health Center catchment area had access to immunization services. With MCSP's technical support, the health center established a Quality Work Improvement Team to review the facility's performance. As a result, DTP1 coverage rose from 53% to 86% in 2016. In the first six months of 2017, the facility reached every eligible person in the catchment area.

Creatively Mobilizing Local Resources for Immunization: Nyakashozi Health Center in Kanungu District

At Nyakashozi Health Center in Kanungu District, a strategy of working with both communities and non-health stakeholders led to enormous improvements in immunization coverage.

Transportation is often the hidden ingredient to a successful immunization program. Without means of transport—meaning both vehicles and the fuel to run them—vaccines do not get distributed to health facilities, health workers cannot conduct outreach sessions in sites convenient to distant communities, and monthly reports and forecasts for vaccine needs do not reach district health offices. This was the problem faced by the Nyakashozi Health Center. This facility, located about 30 kilometers from the Kanungu District vaccine store, conducts outreach sessions for routine immunization at three locations that are 15 kilometers away.

The nursing officer in-charge, Dan Ahimbisibwe, noted that Nyakashozi Health Center could not regularly conduct routine immunization outreach as planned. Even when the facility arranged for transportation by hiring local motorcycles, health workers felt rushed, and could not offer caregivers other services such as health education because of "waiting charges" imposed by hired motorcycles. Unreliable transportation also meant that health workers did not report to immunization outreach sessions on time, disappointing waiting caregivers.

When USAID's flagship Maternal and Child Survival Program (MCSP) started supporting Kanungu District in 2015 and assessed the immunization performance of each of the district's health facilities, coverage for a first dose of diphtheria-tetanus-pertussis containing vaccine (DTP1) —a proxy indicator for access—was only 53% at the Nyakashozi Health Center. Only about half of the people in this facility's catchment area had access to immunization services. MCSP Uganda began supporting this and other health centers in Kanungu District with a technical approach called Reaching Every Community using Quality Improvement (REC-QI). REC-QI builds the technical skills of health center staff and equips them to "think outside the box" to better manage and deliver RI services. Applying tools from quality improvement to analyze, prioritize, and solve problems, REC-QI encourages creative thinking— "thinking aloud" and "thinking allowed"—rather than waiting for the national level of the health system to solve problems and bring resources.

With MCSP's technical support, Nyakashozi Health Center established a Quality Work Improvement Team (QWIT) comprising of health personnel and community representatives. The QWIT, which meets at least monthly to review performance and discuss strategies for improvement, identified lack of transport as a significant problem with negative effects on routine immunization.

"After a month [since sharing the health center's performance and challenges], the board members [of the community-based bank] visited our health facility to assess the health facility's needs."

- Dan Ahimbisibwe, Nursing Officer In-Charge, Nyakashozi Health Center

Dan reported thinking "loudly" and conducting a stakeholder mapping exercise to identify non-health stakeholders, those who work outside the health field but have an interest in the community. He decided to share his health center's immunization performance and challenges with the Nyamirama People's Bank, a community-based organization. He noted, "the manager at Nyamirama People's Bank promised to discuss it at the bank's board meeting. This bank has a culture of helping the community they serve and looks ahead at having a healthy and productive community that will later support the bank to grow. After a month, the board members visited our health facility to assess the health facility's needs, and the health unit management committee also explained the need for transport." The bank provided the facility with 3,000,000 million Uganda shillings (about US $825), and the health facility added 1,000,000 shillings (about US $275) to purchase a new motorcycle in January 2017.

The motorcycle eased the Nyakashozi Health Center's difficulties in collecting vaccines from the district vaccine store, transporting health workers for immunization outreach, taking monthly reports to the district, and other activities. The health center spends about 40,000 Uganda shillings on fuel each month (about US $11)—about half the amount that it previously spent in hiring motorcycles for the same work.

Most important, since MCSP began supporting Kanungu, DTP1 coverage has risen from 53% to 86% in 2016. In the first six months of 2017, it reached every eligible person in the catchment area. The QWIT has now turned its attention to making sure that all children return for all doses of vaccine in order to receive the full benefits of immunization.

By Rebecca Fields, Senior Technical Advisor, MCSP Uganda

Photo by Ambrose Watanda/MCSP

Photo 1. A health worker from Nyabubare Health Center and a village health team member work together to support routine immunization in their community.

LOCATION

Bushenyi District, Uganda

SUMMARY

Since 2014, the Maternal and Child Survival Program has helped build the capacity of health personnel to manage and deliver routine immunization services in over 400 health facilities across 11 districts in Uganda. In 2016, MCSP started working with the staff of Nyabubare Health Center to strengthen their ability to diagnose their own problems and craft locally appropriate solutions to them.

Uniting Communities and Health Services in Bushenyi District to Protect Children from Disease

In Uganda, immunization is the most equitable of health services; 95% of children receive the first doses of vaccine in the immunization schedule.[1] But nationwide vaccination coverage figures mask pockets of populations with large numbers of "left out" children who do not receive the benefits of vaccines or other primary health care services. In 2016, almost one-fourth of children served by Nyabubare Health Center in Bushenyi District in South Western Uganda had not received even their initial doses of vaccines when the United States Agency for International Development's (USAID) flagship Maternal and Child Survival Program (MCSP) began to provide technical support to the district. Because only 76% of children started the vaccination schedule, fewer completed it and received the scheduled later doses that give full protection against such killer diseases as measles.

Since 2014, MCSP has helped build the capacity of health personnel to manage and deliver routine immunization services in more than 400 health facilities across 11 districts in Uganda. In 2016, MCSP started working with the staff of Nyabubare Health Center to strengthen their ability to diagnose their own operational problems and craft locally appropriate solutions to them. Key to this work was the recognition that both health personnel and community members must work in tandem to uncover the root causes of problems and overcome them. With support from MCSP, they worked together to identify the names, locations, and family information of the 409 children to be served by this health center and captured the data in a user-friendly map. By establishing an immunization-focused Quality Work Improvement Team (QWIT), consisting of both health workers and village health team (VHT) members, they also identified the root causes for the low levels of immunization.

On the health system side, health workers realized that they had not known of all the children they were supposed to vaccinate. They had also been reluctant to conduct immunization outreach sessions at sites that were convenient to the community.

[1] 2016 Demographic and Health Survey; 2017 WHO/UNICEF estimates of vaccination coverage.

"USAID MCSP, with the Ministry of Health, supports 11 districts with more than 400 health facilities in Uganda in identifying unserved and underserved communities. MCSP engages these communities, including non-health stakeholders, to ensure that all children under one year of age in the health facility catchment area access routine immunization services. This contributed to Nyabubare Health Center's improvement of its DPT 1coverage from only 76% to 91% within a year (2017 to 2018)."

- Health worker, Nyabubare Health Center

For their part, VHTs had not known the actions they needed to take to improve immunization. With MCSP support, they learned how to register all children who needed to start the vaccination schedule, and to encourage those who had started but discontinued the schedule to complete it.

With community input, the QWIT relocated outreach sites to locations that were more accessible to underserved populations. It assigned health workers clear responsibility for immunization activities in certain groups of communities (Photo 1) while also assigning VHTs to visit particular homes in their villages and encourage complete vaccination (Photo 2). To cover transportation costs, the health center used its own primary health care funds to allocate a small allowance of 5,000 Uganda shillings (about US $1) to the VHT to support each immunization outreach session.

The collaboration between health staff and VHTs extended beyond health services to include engagement of religious leaders. During church services, these influential leaders began to stress the benefits of complete immunization for their entire congregation. They increased community demand for vaccination and advocated for all parents to get their children fully immunized.

Within one year, this strong partnership between the health and community yielded a 26% increase in the number of children who started the vaccination schedule: from 76% to 91% of all children. Nyabubare Health Center now surpasses the government's target by drawing on its own financial resources and soliciting increased community commitment to protect its children from vaccine-preventable diseases.

Photo by Ambrose Watanda/MCSP

Photo 2. A VHT from Nyabubare Health Center registering the immunization status of a child in her community.

By Bryan I. Tumusiime, Knowledge Management Advisor, MCSP Uganda

Photo by Kate Holt/MCSP

Photo 1. A health worker conducts a health education session for mothers and their infants while they await routine immunization services at an MCSP-supported health facility.

NAME

Esther Nairuba

ROLE

Health Officer, Nabuli Health Center

LOCATION

Kibuku District, Uganda

SUMMARY

Esther Nairuba, a newly appointed health officer, used key quality improvement and management tools to help the Nabuli Health Center increase coverage for pentavalent first and third dose vaccination from 50% to 90% in all of the villages that it serves.

Facility Leadership and Community Commitment Boosts Immunization Uptake

As the newly appointed officer in charge of Nabuli Health Center in Kibuku District, Esther Nairuba faced two major challenges. She needed to harmonize a new team assembled from different health facilities, and she had to overcome past problems. Poor service delivery had led to community disdain and low patient turnout. During an immunization quarterly review meeting supported by USAID's flagship Maternal and Child Survival Program (MCSP), Esther realized she had an even harder task ahead of her. Her facility was reported to have the lowest coverage for routine immunization in the entire district. Only half of children under one year of age received their first and third doses of pentavalent vaccine—far below the national target of 90%.

MCSP and the district health office invited Esther and the in-charges from other health facilities to participate in a strategy meeting. Guided by input from MCSP and the local leader (the sub-county chief), Esther mapped out the health facility's entire target population for vaccination of children under one year of age in each of the four catchment villages. MCSP also provided user-friendly tools to identify barriers to service access and establish effective links between each child and the clinic or outreach site that provided immunization services. MCSP has supported strengthing of routine immunization in Uganda since 2014. The project adapted tools from the field of quality improvement and applied them to the standard immunization management approach of the World Health Organization/United Nations Children's Fund. With USAID support, MCSP has introduced the revised approach, called Reaching Every Child using Quality Improvement (REC-QI), in more than 400 health facilities across 11 districts in Uganda.

Back at her own health facility, Esther applied her new skills by convening a meeting with her staff and members of the local village health team (VHT) to identify barriers to immunization and brainstorm on solutions. They identified three main problems: the clinic's practice of offering immunization service only one day per week; low interest in routine immunization among health workers, who often delegated this role to poorly trained staff; and insufficient funds (about US $48 per quarter) for community outreach. This amount covered the costs of only a single outreach session per quarter, meaning that each of the four villages in the facility's catchment area was visited only once a year. Nor was there budget to cover the costs incurred by VHTs to mobilize communities for immunization.

Esther and her team introduced changes during the next quarter. They started offering immunization services twice weekly; assigned qualified staff, including herself, to vaccinate children and women; and more than doubled the funding allocated for immunization to about US $104 per quarter, using the regular quartely primary health care budget as provided by the district. This covered transport and meal costs so that more than one health worker could conduct outreach visits. These visits increased to reach at least three out of the four villages each quarter. The team also allocated funds to four VHT members to support them when they mobilized communities to bring their children to the outreach sessions.

"We realized that the mothers didn't want to come to outreaches to sit and wait through long queues for their children to be immunized. Instead as they waited, we provided information and family planning products of their choice, which made them feel like they had benefited on two fronts. They were more excited to come for routine immunization outreaches."

- Esther Nairuba, Health Officer, Nabuli Health Center

Nabuli Health Center staff convened a follow-up performance review meeting with VHTs and local community leaders and found that, despite the expansion of outreach services, service use remained low. They brainstormed the causes and arranged for the villages' civil leaders (Local Council 1 [LC1] chairpersons) to lead community dialogue meetings and educate families on the lifesaving value of immunization. They also ensured that community mobilizers met with the LC1 chairperson from the lowest-performing village to ask him to promote immunization services and address anti-vaccination rumors in his village.

Nabuli Health Center also identified an additional village that had not received services for over three years due to a swamp that cut it off from easily accessing services. The staff arranged for outreach services for both immunization and family planning. This proved to be a great incentive for mothers to bring their infants. As Esther told it:

> "*We realized that the mothers didn't want to come to outreaches to sit and wait through long queues for their children to be immunized. Instead, as they waited, we provided information and family planning products of their choice, which made them feel like they had benefited on two fronts. They were more excited to come for routine immunization outreaches.*"

Within six months, Nabuli Health Center reported that coverage for the first and third doses of pentavalent vaccine increased from 50% to 90% in all of the villages that it serves—now five instead of four. Esther attributed these improvements to her commitment as a leader, engaging and facilitating relevant community resource persons for mobilization and demand creation, listening to and addressing community needs for integrated services, and using her facility's own data to determine which actions would bring services closer to every child and family. These are measures that she recommended to other health facilities that, like Nabuli Health Center, face the challenge of limited resources.

By Bryan Tumusiime, Knowledge Management Advisor, MCSP Uganda

Photo by Kate Holt/MCSP

Photo 1. Children at an MCSP-supported health facility wait for routine immunization services.

LOCATION

Kakunyu Village, Uganda

SUMMARY

A piece of tape, a pen, and 30 minutes: these are the resources that health workers in Uganda need to organize their child registers in a way that helps them to reach all children with immunization services. Recognizing the importance of the child register for monitoring immunization performance and improving service delivery, MCSP introduced simple steps in more than 400 health facilities in 11 districts to make the register easier to use.

Reorganizing Child Registers to Improve Immunization Services

Health workers often view the task of filling in forms and registers as necessary but tedious and time-consuming, without a real benefit to make it worth their while. But USAID's flagship Maternal and Child Survival Program (MCSP), which has supported the Uganda Expanded Programme on Immunisation (UNEPI) and district health teams in 11 districts since 2014, has introduced a practical way for health workers to reorganize their child health registers that makes their lives easier while improving services for families.

Traditionally, Ugandan health workers captured data on child vaccination using tally sheets. Just a stroke on the tally sheet for each vaccination given was seen as sufficient documentation; the strokes were then summed up monthly and entered into the Ministry of Health's District Health Information System.

The tally sheet is quick and easy to use, but it is not enough. A single stroke cannot be verified or corrected; more importantly, it provides no information on which child was vaccinated, from what village, when, at what age, or where. Without such information, health workers and village health teams (VHTs) cannot trace children to ensure that they return for full immunization. And if a child's caregiver comes to the clinic without the home-based record on which vaccinations are also recorded, health workers will have difficulty reconstructing the child's vaccination history to decide which vaccinations to give that day. With more and more vaccines added to the routine vaccination schedule, the accuracy of verbal histories is increasingly unreliable.

Child registers that capture this identifying information have long been available in Uganda—and long underused. In 2016, when MCSP interviewed 91 health workers from six districts, many blamed understaffing: with several tasks to perform at an immunization session, it takes less time to simply use the tally sheet. They also said that they did not know what to do with children who come from villages outside the catchment area— "visitors" who are not supposed to be recorded in a given facility's child register. Some said they did not know how to fill out the child register. Overall, they did not see much purpose in filling it out.

Recognizing the importance of the child register to monitor immunization performance and improve service delivery, MCSP introduced simple steps in more than 400 health facilities in 11 districts to make it easier to use. As part of a standard process for microplanning developed by MCSP and recently adopted for nationwide use by UNEPI, all villages in a facility's catchment population are mapped and the number of children under one year of age per village is estimated. This information is used to organize the child register by village, with the number of pages allotted to each village based on the estimated number of children under age one year.

"The organization of the child register separated by villages has helped me a lot. For example, if a mother came without her child's vaccination card before the child register was organized by village, this took 10 minutes. Now it just takes no more than two minutes to determine which vaccines the child needs that day."

- Immunization Focal Point

MCSP also provides training and supervision to sensitize health workers on the importance and practical utility of the child register organized in this fashion, specifically:

- Looking up the child's name in the register during subsequent immunization visits is quick for the health worker, as the parent needs only to mention their village of residence.
- Tracing defaulters, dropouts, and non-users is also convenient because volunteers who work in VHTs can easily work from a full list of infants for each village.
- The health worker can easily detect equity issues by rapidly reviewing which villages have the lowest turnout for immunization and the highest numbers of unimmunized children.
- When RI coverage is above 100%, the health facility can determine the coverage in its catchment area by only considering the doses given to children in the catchment area and excluding visitors.
- When the target population is uncertain, the health facility can use the child register to prove beyond a doubt that all children in the facility catchment area have been vaccinated.

Photo by Possy Mugyenyi/MCSP

Photo 2. The child register with tabs (right corners of the illustrated pages) showing how it is organized by village, displaying the page for Kakunyu Village.

These interventions significantly improved data quality. For districts supported by MCSP, the discrepancy between doses of DTP3[1] recorded on the tally sheet versus in the child register dropped from 91% to 30% in 2015–2016, and from 63% to 26% in 2016–2017. There is more work to do, and the issue requires continued attention, but the trend toward better and more useful data is clear.

As the nursing officer at one health center pointed out, "Someone has to be allocated that task of filling the register." With a laugh, she added: "Yes, it's tedious, but once you know the benefit, you know that it's worth it."

At another health center, the immunization focal point said, "The organization of the child register separated by villages has helped me a lot." She cited the example of a mother coming without her child's vaccination card. "Before the child register was organized by village, this took 10 minutes. Now it just takes no more than two minutes to determine which vaccines the child needs that day."

The uptake of the re-organized child registers has been rapid and widespread as health workers see it as easing their workload while helping them make sure that every child in every village is reached with immunization services.

[1] Third dose of diphtheria-pertussis-tetanus containing vaccine, a standard measure of immunization program performance.

By Possy Mugyenyi, National Technical Director,
MCSP Uganda

Appendix C: List of Presentations at International Conferences

MCSP Uganda gave the following presentations, posters and webinars at international conferences and meetings:

- *"Putting REC-QI into practice with a district management example/ Keeping the cold chain: two gas cylinders for every health facility with a refrigerator",* MCSP webinar on REC-QI, November 17, 2014.

- *"Mapping Health Facility Catchment Areas for Target Populations: A break through to health facility microplanning and performance monitoring for action",* 10th MakCHS-Annual Scientific Conference 2014, 22nd Uganda National Association of Community and Occupational Health (UNACOH) Annual Meeting and 13th WHO Dr. Matthew Lukwiya Memorial Lecture Joint Annual Scientific Health Conference, Kampala, Uganda, September 24-26, 2014.

- MCSP webinar series on strengthening the quality of health services that included *"Reaching Every Community using Quality Improvement techniques (REC-QI): Experience with strengthening local management of services in Uganda",* October 19, 2016.

- *"REC-QI Approach to Improve RED Implementation*", WHO/UNICEF meeting "Sharing of Best Practices in Transitioning from RED to REC", Cape Town, South Africa, January 23-30, 2016.

- *"REC-QI Approach*" side meeting, 2017 EPI Managers Meeting for East and Southern Africa, Kampala, Uganda, March 20-22, 2017.

- *"MCSP and UI-FHS REC/D-QI Approach to Facilitate Transitioning from RED to REC"*, 14th World Congress on Public Health, Kolkata, India, February 11-15, 2015.

- *"REC-QI Approach to Microplanning*", UNICEF/Middle East and North Africa Regional Workshop on Equity-Informed Microplanning, Dead Sea, Jordan, September 25-27, 2017.

With complementary funding from The Bill & Melinda Gates Foundation through SS4RI, the following presentations were also given to share information and lessons learned on REC-QI:

- *"Use of Quality Improvement Tools to Improve Management, Scope and Equity of Routine Immunization Services in Uganda"* poster presentation, Institute for Healthcare Improvement Meeting, Durban, South Africa, February 2018.

- *"Strengthening immunization systems through an innovative approach: Lessons from RED-QI implementation in Ethiopia and Uganda"* presentation, The Bill & Melinda Gates Foundation, Seattle, Washington, USA, January 2019.

Appendix D: List of Materials and Tools Developed or Adapted by the Program

#	Material or Tool Name	Type of Tool/Material
Materials and tools developed by the program		
1	MCSP RI Learning Study - Report on Kapchorwa Doer/Non-Doer Analysis	Technical Report
2	MCSP RI Learning Study - Report on REC-QI Assessment	Technical Report
3	Learning from Implementation of the REC-QI to Strengthen the RI System in Uganda	Research Brief
4	REC-QI: Mapping to Support RI Microplanning in Uganda	Technical Brief
5	Strengthening the RI System through a REC-QI Approach in Uganda: A How-To Guide	Technical Guide
6	District Leaders' Commitments to Support and Improve RI in Uganda	Report
7	Bulambuli District: Doubling Service Reach through Participatory Mapping for Immunization and Other Health Services	Success Story
8	Creatively Mobilizing Local Resources for Immunization: Nyakashozi Health Center in Kanungu District	Success Story
9	Uniting Communities and Health Services in Bushenyi District to Protect Children from Disease	Success Story
10	Facility Leadership and Community Commitment Boosts Immunization Uptake	Success Story
11	Reorganizing Child Registers to Improve Immunization Services	Success Story
12	Photo Essay: Mapping Communities for a Healthy Future: Health care options expand for families in Rural Uganda	Photo Essay
13	Reaching Every Child with Routine Immunization: Field Experiences from Uganda	Video
14	MCSP Uganda: Stakeholder Experiences Strengthening Routine Immunization	Video
National level materials and tools revised by the program		
15	Uganda's first-ever national Immunization Policy	Policy
16	Immunization in Practice (IIP): A Reference Manual for Pre- and In-Service Health Workers, 3rd edition	Reference Manual
17	Adapted the In-service Operational Level (OPL) immunization training materials to be competency-based (CBET) and inclusive of REC-QI	Training Materials
18	Immunization content guides for pre-service health workers' training (e.g., certificate, diploma and bachelors), adapting the WHO EPI Prototype Curricula for pre-service immunization training	Immunization Training Curriculum
19	National EPI Standards	Guidelines

Appendix E: Learning Matrix

Learning questions	Status/Update, incl. IRB approvals and planned technical assistance	Final products and dissemination
What are the tangible results of the REC-QI approach and the principle enablers/drivers of change along the REC-QI continuum from "Orient" to "Sustain"?	Dr. David Kawa Mafigiri from the Makerere University School of Social Work and Social Administration was contracted as the local Principal Investigator to lead the assessment in six selected districts that received either MCSP or MCHIP implementation support (MCHIP: Iganga and Rukungiri Districts; MCSP: Kanungu, Mitooma, Butaleja and Bulambuli Districts). The protocol for the assessment was granted USAID and IRB approval, including local IRB approval from the Makerere University. A team of Research Assistants was trained, and data was collected and analyzed from all six selected districts. During PY4, preliminary findings were shared with the MCSP team and were used to refine the REC-QI approach as described in the progress narrative above. A draft report was shared with MCSP in late PY4. The final report with detailed findings and a technical brief with an overview of the findings will be shared with USAID and disseminated to key stakeholders in country and at the global level.	Technical brief highlighting key findings. Technical report with detailed findings.
What are the enablers and inhibitors of uptake and sustainability of REC-QI practices in Kapchorwa District?	Mr. Xavier Nsabagasani, a qualitative researcher, was contracted as the local Principal Investigator to lead the "doer/non-doer" assessment in Kapchorwa District, which examined the factors associated with uptake and sustainability of REC-QI practices. The protocol for the assessment was granted USAID and IRB approval, including local IRB approval from Mulago Hospital. A team of Research Assistants were trained and data collection was completed in late PY3. During PY4, the data was analyzed and the preliminary findings were shared with the MCSP team. These findings were used to refine the REC-QI implementation approach in early PY4 as described in the progress narrative agove. A draft report was shared with MCSP in late PY4. The final report with detailed findings and a technical brief with an overview of the findings will be shared with USAID and disseminated to key stakeholders in country and at the global level.	Technical brief highlighting key findings. Technical report with detailed findings.

Appendix F: MCSP CH Country and Country Support Team

In Country Team	
Dr. Gerald Kalule Ssekitto	Chief of Party
Dr. Possy Mugyenyi	National Technical Director
Dr. Sarah Naikoba	Child Health Team Lead
Dr. Eisha Grant	Child Health Advisor
Bryan Tumusiime	Knowledge Management Advisor
Robert Byabasheija	Monitoring, Evaluation, and Learning (MEL) Advisor
Jasper Abor	Child Health Officer
Agnes Namagembe	Child Health Officer
Florence Kitaka	Finance and Administration Director
Jenipher Kyamazima	Finance and Administration Manager
David Otimeri	Finance and Administration Officer
Judith Atyang	Administrative Assistant/Receptionist
George Sekimpi	Head Driver
Nelson Opiyo	Driver
Michael Waidha	Driver

U.S Based Country Support Team	
Kate Onyejekwe	Country Support Manager, JSI
Victoria Rossi Lada	Senior Program Officer, JSI
Zeenat Patel	Senior Technical Advisor, Child Health, JSI
Disha Ali	Measurement, Monitoring, Evaluation, and Learning (MMEL) Advisor, JSI
Grace Chee	Health Systems Strengthening and Equity Team Lead, Results for Development (R4D)
Benjamin Picillo	Health Systems and Equity Program Officer, R4D
Meredith Lathrop	Senior Program Officer, R4D
Sydney Taylor	Senior Program Associate, R4D
Elena Kanevsky	Finance and Administration Director, JSI
Kadiatou Diallo	Program Coordinator, JSI

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