MCHIP Uganda End-of-Project Report

July 1, 2012 - June 30, 2014

The Maternal and Child Health Integrated Program (MCHIP) is the USAID Bureau for Global Health's flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria, nutrition, and HIV/AIDS, and strongly encourages opportunities for integration. Cross-cutting technical areas include water, sanitation, hygiene, urban health and health systems strengthening.

MCHIP brings together a partnership of organizations with demonstrated success in reducing maternal, newborn and child mortality rates and malnutrition. Each partner will take the lead in developing programs around specific technical areas: Jhpiego, as the Prime, will lead maternal health, family planning/reproductive health, and prevention of mother-to-child transmission of HIV (PMTCT); JSI—child health, immunization, and pediatric AIDS; Save the Children—newborn health, community interventions for MNCH, and community mobilization; PATH—nutrition and health technology; JHU/IIP—research and evaluation; Broad Branch—health financing; PSI—social marketing; and ICF International—continues support for the Child Survival and Health Grants Program (CSHGP) and the Malaria Communities Program (MCP).

Country Summary

Selected Health & Demographic Data for Uganda	
DEMOGRAPHIC DATA	
GDP per capita	USD$509
Total Population	33,424,683
MATERNAL HEALTH	
Maternal Mortality Ratio	430
(deaths/100,000 live births)	
Percent of maternal deaths due to HIV	24
Skilled birth attendant coverage	42.6
Antenatal care, 4+ visits	47.2
CHILD HEALTH	
Infant mortality rate	63
(deaths/1000 live births)	
Under 5 mortality rate	99
(deaths/1000 live births)	
Treatment for acute respiratory infection	73.3
Oral rehydration therapy for diarrhea	39.6
IMMUNIZATIONS	
Diphtheria-pertussis-tetanus 3rd dose coverage	78
(WHO/UNICEF estimates, 2012)	
Percent of district with > 80% DPT3 coverage	42
(MoH administrative reports, 2012)	
DPT3 equity ratio (wealthiest: poorest)	1.01
(Uganda DHS 2011)	

Major Activities

1. Operationalized RED/REC with Quality Improvement approaches:
   a. Conducted macro and micro mapping exercises for all 5 MCHIP districts to clarify catchment populations
   b. Conducted baseline assessment in 5 MCHIP districts to identify problems and assets to introduce REC-QI
2. Provided technical support to develop the first-ever EPI Policy
3. Improved quality and use of data by publishing 6 nationwide newsletters with EPI data
4. Supported UNEPI's planning and management capacity: Participated in 14 technical review meetings and 25 QRMs
5. Technically and financially supported UNEPI:
   a. Trained 41 Central Operational Level (OPL) Trainers
   b. Trained 11,115 Village Health Team members on EPI
   c. Trained 1,255 health care providers on PCV
   d. Conducted a nationwide Data Quality Self-Assessment (DQS) in 26 districts including five MCHIP districts

Program Dates	June 2012 - June 2014					
Total Mission Funding to Date by Area	USD$1,200,000					
Total Core Funding to Date by Area	USD$500,000					
Geographic Coverage	No. (%) of provinces/ Regions	3%	No. of districts	5	No. of facilities	310
Country and HQ Contacts	Dr. Gerald Ssekitto, Country Director USAID/MCHIP; Pat Taylor, Country Support Manager; Jennifer Melgaard, Senior Program Officer; Jenny Sequeira, Senior Technical Officer					

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Acronyms and Abbreviations

AFENET	African Field Epidemiology Network
ARISE	Africa Routine Immunization System Essentials Project (JSI/BMGF)
BASICS	Basic Support for Institutionalizing Child Survival Project
BMGF	Bill and Melinda Gates Foundation
CDC	Center for Disease Control and Prevention
CHD	Child Health Days Plus
CHAI	Clinton Health Access Initiative
cMYP	Comprehensive Multi Year Plan
CPSSD	Community Problem Solving and Immunization Strategy Development (developed under BASICS II in Uganda; the foundation of RED's community linkages component globally)
CSO	Civil Society Organization
DHS	Demographic and Health Surveys
DHT	District Health Team
DQS	Data Quality Self-assessment
DPT	Diphtheria Pertussis Tetanus Vaccine
EPI	Expanded Program on Immunization
FY	Fiscal Year
GAVI	Global Alliance for Vaccines and Immunizations
HF	Health Facility
HPAC	Health Policy Advocacy Committee
HSS	Health System Strengthening
HQ	Headquarters
JSI	John Snow, Inc.
M&E	Monitoring and Evaluation
MCHIP	Maternal and Child Health Integrated Program
MNCH	Maternal Neonatal Child Health
MoH	Ministry of Health
NMS	National Medical Stores
NUVI	New and Underutilized Vaccine Introduction
OPL	Operational Level (training)
PCV	Pneumococcal vaccine
PDSA	Plan-Do-Study-Act
PHC	Primary Health Care
PMP	Performance Monitoring Plan
QI	Quality Improvement
QIT	Quality Improvement Teams
QRM	Quarterly Review Meeting
REC	Reaching Every Child
REC-QI	Reaching Every Child with Quality Improvement
RED	Reaching Every District
RC	MoH's Resource Center
RI	Routine Immunization
TWG	UNEPI's Technical Working Group
UDHS	Uganda Demographic and Health Survey
UNEPI	Uganda National Expanded Programme on Immunization
UNICEF	United Nations Children's Fund
UPA	Uganda Pediatric Association
UPHOLD	Uganda Program for Human and Holistic Development
USAID	United States Agency for International Development
VHT	Village Health Team
VPD	Vaccine Preventable Disease
WHO	World Health Organization
WIT	Work Improvement Teams

Acknowledgments

Executive Summary

Background

Despite improvements to Uganda's health system in recent years, reports such as the Expanded Program on Immunization (EPI) reviews and coverage survey data from the 2011 Demographic and Health Survey (DHS) report identify stagnation in Uganda's routine immunization (RI) portfolio. Between 2010 and 2013, Uganda faced outbreaks of yellow fever, measles, polio, and hepatitis B—events that highlighted the need for additional technical and financial investment in and political support for RI. Inconsistent progress in RI over the past 8 years is attributable in part due to persistent systems-based problems within the country's operational components related to management, immunization and surveillance.

The United States Agency for International Development (USAID) has a long history of supporting Uganda's immunization programs. More recently, projects with a key focus on RI have included: BASICS II (1999-2004) which focused on strengthening health worker interactions and partnerships with communities as part of immunization—a precursor to the Reaching Every District (RED) approach; UPHOLD bilateral (2003-2007); and, Africa Routine Immunization System Essentials (ARISE -2011-2012), BMGF funded, exploring quality improvement in RI in Masaka district.

The Maternal and Child Health Integrated Program (MCHIP), USAID's flagship Maternal and Child Health global portfolio, was asked by USAID Uganda to lead the 2010 EPI review. Based on the findings of the review, USAID Uganda provided funding from June 2012 to June 2014 to implement a program to strengthen RI. Each of these programs worked closely with the Ministry of Health (MOH) and the Uganda National Expanded Programme on Immunization (UNEPI) to strengthen and expand routine immunization services.

UNEPI and program partners focused implementation efforts on using the RED[1] strategy, developed by UNICEF and WHO with support from BASICS II technical experts, which supports greater "links between community and service—regular meetings between community and health staff" and states that "immunisation services need to integrate better into community structures in an environment of consultation between the community and health managers."[2]

The RED strategy is comprised of five key components: planning and management of resources, community linkages, revitalized outreach, supportive supervision, and active monitoring. The MCHIP program built upon these components and included additional focus on capacity building, strengthening community linkages and ownership, and monitoring and supervision. MCHIP also took lessons from the Community Problem Solving and Strategy Development Approach (CPSSD) which was used successfully in Uganda and elsewhere by BASICS/USAID in the early 2000s, and the ARISE project completed in Masaka district mid-2012. The work done in Masaka formed the foundation for the conceptualization of the MCHIP program, which emphasized operationalizing Uganda's national RED program (or Reaching Every Child, REC)—which is designed to increase vaccination coverage and

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[1] For more information on REC/RED, see "Implementing the Reaching Every District Approach" guide at http://www.who.int/immunization_delivery/systems_policy/AFRO-RED_Aug2008.pdf
[2] Increasing Immunisation Coverage in Uganda The Community Problem Solving and Strategy Development Approach; BASICS II, November 2003. Accessed on line at http://pdf.usaid.gov/pdf_docs/Pnacw611.pdf

improve health service delivery—with strengthening elements of Quality Improvement (QI) and Plan-Do-Study-Act (PDSA) performance improvement cycles.

The approach, hereafter referred to as "REC-QI", addresses high priority problems by identifying their root causes and introducing small, rapid, doable changes that can be quickly tested and vetted for adoption, adaptation, or abandonment at local level. The REC-QI approach also expands on Uganda's basic REC guidelines to provide more in-depth steps for District Health Teams (DHTs)—to particularly empower district and management teams to better understand the details of operationalizing REC (e.g. going beyond REC general guidance to map all catchment areas, with providing practical and detailed steps to identify catchment areas and population with macro/micro mapping guidance). Overall, the REC-QI methodology promotes a learning environment and provides DHTs and health workers with user-friendly tools to better understand root causes of the symptoms impacting routine immunization in their communities.

During the MCHIP Uganda program, MCHIP worked closely with USAID/Uganda, UNEPI, MOH officials, NMS, WHO, UNICEF, and Sabin's Sustainable Immunization Financing project at the national level and in five selected USAID-focus districts: Iganga in Jinja region, Busia and Kapchorwa in the Eastern/Mbale Region, and Kabale and Rukungiri in the Southwestern Region. MCHIP Uganda's two main objectives were to:

i. Improve the capacity of UNEPI to plan, manage, implement, monitor, and coordinate support for RI at the national level; and
ii. Strengthen the capacity of the District Health Team (DHT) to manage and coordinate support for immunization in these selected USAID focus districts: Busia, Iganga, Kabaale, Kapchorwa, and Rukungiri.

Main MCHIP Interventions to Improve Routine Immunization through REC-QI	
Macro/micro mapping	Mapping catchment and service areas to improve accountability, active use of data for decision making, and coverage
PDSA Cycles	Using team problem solving techniques for quality improvement in order to reach every child in each of the 5 districts targeted with routine immunization….by breaking larger problems into smaller, doable parts
Cold Chain Improvement	Using PDSA cycles to implement district-wide gas cylinder inventory, tracking, and purchasing systems, as well as HFs using PDSAs to reorganize cold chain management and maintenance issues. Now all gas cold chain refrigerators in the five districts have a back-up system to ensure vaccines are kept between 2-8 degrees Celsius
Supportive Supervision	Strengthen regular and supportive visits to all HFs in a district, and combining QI coaching concepts into mentoring of QI teams during supportive supervision
Quarterly Review Meetings (QRM)	Regularly engage partners and districts to evaluate progress; combining QI learning session concepts into quarterly meetings as part of expanding and institutionalizing a peer learning/sharing environment

Accomplishments

MCHIP Uganda was an immunization-only funded program which worked closely with UNEPI and program partners during the implementation period. Following are key achievements.

- Operationalized RED/REC with Quality Improvement approaches
- As a focus area of REC-QI, strengthened capacity development: strengthened supportive supervision, built skills of mentors, trained on basic EPI as well as continuous quality improvement methodologies, all of which enabled the districts to use their data to identify problems (poor access or utilization), identify areas with under-immunized children and work together (district, HSD and community) to identify solutions and come up with implementation plans (PDSA).
- Supported New and Underused Vaccines Implementation (NUVI): supported successful PCV 10 introduction in 5 MCHIP-focus districts as part of the national effort to introduce PCV10 countrywide. The PCV10 introduction training covered the whole range of national strategies for pneumonia prevention and treatment as described in the global action Plan for prevention and control of Pneumonia (Protect, Prevent and Treat).

Specific national and district-level achievements

At national level, key MCHIP accomplishments include:
- Provided ongoing technical support to UNEPI via participation in: cMYP update; ongoing monthly EPI technical meetings; finalization of EPI draft policy; district planning meetings (led by SDS/USAID), WHO South East EPI Managers' meeting in Harare (2013, and 2014), to ensure RI strengthening was incorporated as a priority
- Supported the development and follow up of UNEPI's revitalization plan 2012-2014, which included a renewed focus on reducing inequities in coverage
- Supported UNEPI to conduct and follow up after a national Data Quality Self-assessment (DQS) to address persistent data quality challenges
- Worked with UNEPI and the MoH Resource Center (RC) in revitalizing a regular review of all-district immunization data, published quarterly in *New Vision*, one of Uganda's newspapers with national distribution
- Supported UNEPI in finalizing its national EPI immunization policy, currently sitting with the cabinet for approval
- Supported MoH, UNEPI and Ministry of Education in updating its in-service Continuing Medical Education (CME) EPI curriculum for nurses, midwives and doctors (ongoing)
- Supported training of 11,115 (F 6583 & M 4532) VHTs in the five supported districts on EPI (EPI vaccines, VPD, RI schedule, mobilization for RI, use of child register and

Child health card to guide parents/guardians on the remaining doses). VHTs are representatives of the community – Linking services with the community.

- Supported the training of national level Training-of-trainers in EPI, REC, QI, and supportive supervision
- Provided technical support to UNEPI and partners such as WHO and UNICEF in introduction of pneumococcal vaccine (PCV-10) at the central level and in 3 regions and served as a member of PCV National Coordination Committee training as well as surveillance sub committees. The training included national strategies for pneumonia prevention and treatment as described in the global action Plan for prevention and control of Pneumonia (Protect, Prevent and Treat).
- Introduced methodology to boost REC for RI with a quality improvement focus (REC-QI) in 5 districts, 310 health facilities and 706 (F 368 & M 338) health workers.

At district level, key accomplishments include:
- Worked with five DHTs in conducting a baseline assessment to identify programmatic issues and assets to assist with further development of REC-QI
- Assisted DHTs in setting up a continuous and systematic macro mapping of all health facilities so as to avoid duplication of service areas
- Activated the RED immunization strategy and categorization tool whereby all health facility's key immunization data are tracked, compared, and shared on a quarterly basis to analyze problems of access and utilization
- Operationalized a focused approach to REC with QI strengthening elements (REC-QI approach)
- Supported 2 cross-district knowledge sharing and learning as well as cross-country learning between Uganda and Ethiopia, both implementing the REC-QI approach
- Trained 1034 (F 683 & M 351) Operational Level health workers in EPI
- Supported conduction of 25 (Yr 2013 15 & Yr 2014 10) review meetings, including use of data and feedback of data to lower levels and sub county administrative leadership (non-traditional leaders)
- Trained 706 (F 368 & M 338) health workers and facilitated initiation of a REC-QI methodology to sustainably and affordably strengthen RI

Lessons Learned/Recommendations

Following is a summary of recommendations from this two year project; complete lessons learned plus recommendations, refer to the "Lessons Learned/Recommendations" section

1. Scale up a refined "lightened" REC-QI implementation approach, jointly developed with the five districts, to more districts in Uganda and to other countries—especially as countries transition from RED to REC as per global and WHO/AFRO recommendation.
2. Ensure local context is taken into consideration when introducing REC-QI and throughout implementation.
3. Build teamwork and ownership through regular QRMs to support the DHT to lead the REC-QI process.
4. Use PDSA cycles to improve how districts forecast and quantify their own vaccine needs and how HFs strengthen management and maintenance of their cold chain.

5. Use macro and micro mapping as a key accountability and management tool when implementing REC-QI, and as a method to activate routine use of the RED categorization tool.
6. Support Health Sub Districts and Health Facilities to solve their own problems associated with RI at the district level; if problems persist, advocate with district level administrative leaders to help foster solution-seeking and cross sharing with others who have solved similar problems.
7. Use the basic REC-QI components to assess and adapt management changes as well as improve service delivery problems (through both management and service delivery focused PDSA cycles).
8. Consider using REC-QI elements to strengthen other health interventions; not only RI but also PHC interventions (e.g. apply skills learned in addressing EPI dropouts to address ANC dropouts to strengthen addressing continuum of care issues).

9. Build on-the-job supportive supervision into REC-QI programs as it will build staff capacity, and provide an enabling environment for staff to raise and solve issues
10. Develop the expanded REC-QI Guide using the technical steps developed by MCHIP under this program to support scale up in Uganda and in other countries—particularly in the context of GAVI's renewed focus on processes and intermediate results.
11. Sufficient time must be given to institutionalize REC-QI in medium-to-weak district health systems—approximately 20 months of technical support is needed.

Introduction

MCHIP's aim was to strengthen the routine immunization (RI) program in Uganda by providing technical support to the Uganda National Expanded Programme on Immunization (UNEPI) at central and district levels. Uganda's national immunization coverage has stagnated in performance during 2007-2009, in part due to challenges in the routine service delivery. Additional variability in immunization performance has been due in part to a lack of a strong surveillance system, availability of vaccines and supplies in all districts, and Uganda's overall ability to maintain high coverage in a country with a high population growth. The polio (2010), measles and hepatitis B (2013) outbreaks underscore the critical need for continued efforts to increase immunization coverage levels in a sustainable way.

Within the country, much variation exists across districts (see *Figure 2 below*) with poorer performance in the northern parts of Uganda, as recovery from years of conflict continues. In general, Uganda's immunization program has improved over the past decade. However, the country's immunization coverage as measured by a third dose of diphtheria-tetanus-pertussis containing vaccine (DPT3 or Penta 3) saw a decline in 2007 and performance challenges over the next few years—with 2009-2011 showing a leveling off of coverage before a slight decline in 2012 (*Figure 1*).

Multiple recent assessments such as the 2010 EPI Review, 2011 Effective Vaccine Management Assessment, and 2012 assessment of immunization and surveillance all point to persistent systems-based problems within the country's operational components of immunization and surveillance. The 2011 Uganda Demographic and Health Survey (UDHS) provided an opportunity for WHO/UNICEF estimates to recalibrate retroactively, leading to some higher estimates for the mid to late 2000s than prior to the survey. However, gains seen in the data trend in *Figure 1* should be interpreted with caution.

Figure 1: Infant DTP3/Penta 3 Coverage 1982-2012. Source: WHO/UNICEF estimates
http://apps.who.int/immunization_monitoring/globalsummary/estimates. Accessed on Nov. 27, 2013.
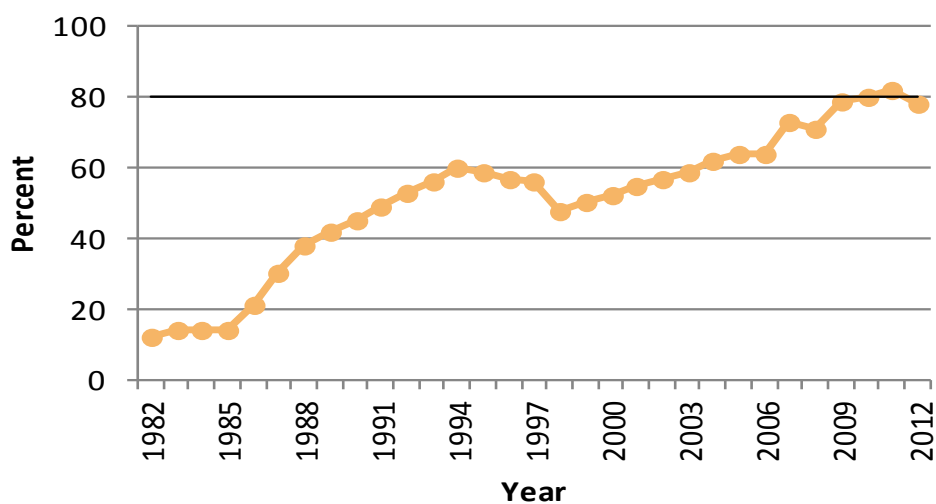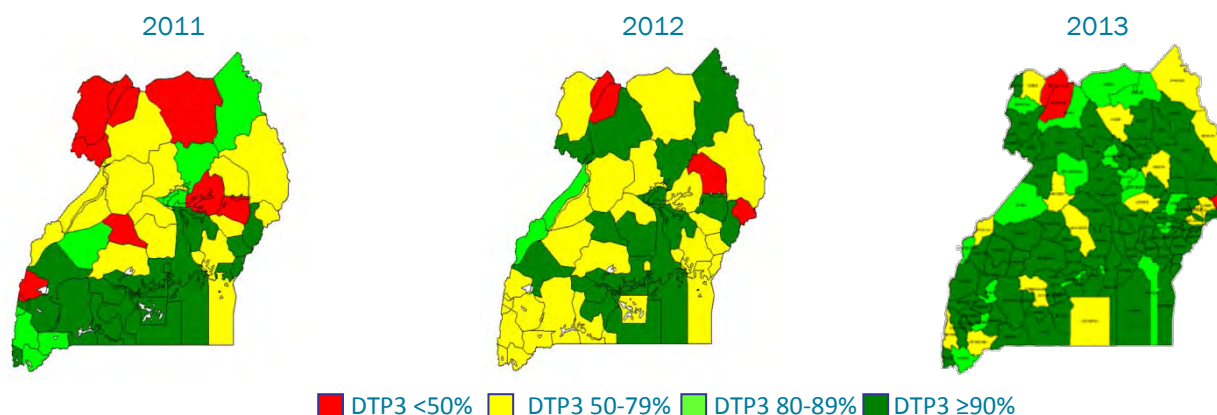
Figure 2: Three years of DPT3/Penta 3 Coverage by District; source: MoH administrative reports.

| 2011 | 2012 | 2013 |

■ DTP3 <50%   ■ DTP3 50-79%   ■ DTP3 80-89%   ■ DTP3 ≥90%

Note: data quality concerns with above maps point to the need for cautious interpretation

While the above maps (Figure 2) show that from 2011-2013 the number of districts with DTP3 coverage above 90% increased significantly, they do not convey ongoing data quality concerns in the midst of several recent outbreaks from vaccine preventable diseases (e.g. measles outbreak in 2013 as well as polio and hepatitis B outbreaks in the past few years).

MCHIP Country Program
In mid-2012, the USAID Mission in Uganda made funding available to MCHIP to strengthen Uganda's routine immunization system through technical assistance to UNEPI at central level and in select districts. Focus was on the implementation of the Reaching Every Child (REC) approach[3] using elements of Quality Improvement (QI). During the implementation years of the MCHIP Uganda program (2012-2014), MCHIP worked closely with USAID/Uganda, UNEPI, MOH officials, NMS, WHO, UNICEF, and Sabin's Sustainable Immunization Financing project at the national level and in five selected USAID-focus districts: Iganga in Jinja region, Busia and Kapchorwa in the Eastern/Mbale Region, and Kabale and Rukungiri in the Southwestern Region.

The MCHIP program sought to improve access to and utilization of RI services in areas such as reaching underserved populations and: 1) fostering community, facility, select district, and national ownership, follow-up and accountability for immunization results; 2) improving cold chain management and logistics at the district and health facility levels; 3) improving the reliability and quality of routine immunization services provided by static and outreach service delivery points; and 4) achieving optimal and sustained utilization of routine immunization services by families. Implementation began at national level in June 2012 and district level in January 2013, and concluded operations under MCHIP in June 2014.

MCHIP Uganda's two main objectives include:

Objective 1: National Level: To improve the capacity of UNEPI to plan, manage, implement, monitor, and coordinate support for routine immunization
**Objective 2: District Level:** To strengthen the District Health Team (DHT's) capacity to manage and coordinate support for routine immunization

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[3] For more information on REC/RED, see "Implementing the Reaching Every District Approach" guide at http://www.who.int/immunization_delivery/systems_policy/AFRO-RED_Aug2008.pdf

Operationalize REC-QI

In July 2012, MCHIP Uganda began implementing program activities with the Quality Improvement (QI) in the Reaching Every District/Child (RED/REC) approach being a key focus and the leading framework for MCHIP's implementation strategy for work in Uganda. The Uganda MOH introduced the REC strategy for routine immunization in 2003. However, despite the many years since adoption of REC, considerable implementation variation of REC application remains across and within districts and health facilities, which may have contributed to limited improvement in RI.

To contribute to strengthening RI in Uganda, MCHIP emphasized the full operationalization of Uganda's national REC approach by introducing strengthening elements of QI with Plan-Do-Study-Act (PDSA) performance improvement cycles. This approach, known as **"REC-QI",** provides opportunities to address challenges by implementing small changes that can improve RI services. For example, depending on the results of a root cause analysis, the symptom of persistently high drop-out rates might be addressed by reducing long waiting times at health centers and re-opening outreach sites based on community preferences for the site and time of service. In addition, the REC-QI approach provides details on 'how-to' for the national REC strategy—as the current REC strategy focuses mostly on the "what" and less on processes. Following are the key components of the REC-QI methodology which MCHIP used to implement this project and defined further in the report: held Quarterly Review Meetings, supported active use of data, provided trainings, conducted peer exchange visits, engaged the community, conducted micro and macro mapping exercises, and improved partner coordination of RI.
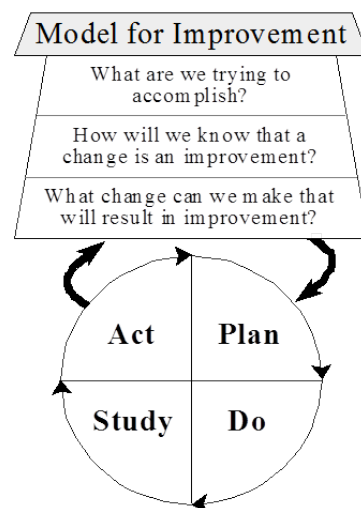
To implement **"REC-QI"**, MCHIP supported Uganda's MOH, District Health Teams (DHTs) and health facilities (HFs), working within their means to support districts to come up with and share local solutions to challenges which they implement and monitor by themselves. The merging of REC-QI gave program managers and implementers practical tools to help them continuously find and then provide timely vaccination to every eligible woman and child by:
- **Diagnosing** specific problems, using micro-planning and QI analysis tools
- Finding **underlying causes** of system failures
- Using a team approach to decide on **priority areas for change**
- Addressing priority areas by working on **smaller parts** of a larger problem that can be rapidly tested using local knowledge and expertise (1-3 month PDSA "test cycles")
- Determining if the changes being made are leading to **improvement**

MCHIP Uganda operationalized REC-QI as a step-by-step process, implemented district by district, sub county by sub County, and health facility by health facility. The REC-QI approach, using RI as an entry point, demonstrates a way forward for strengthening the entire PHC system in Uganda. Applying a mentoring and coaching approach, tested tools and participatory methods ensures quality services for every woman and child.
MCHIP contributed to national policies and plans, and to the fine tuning and eventual scaling up of affordable ways to operationalize RED at the national and district levels, and

other strategies adopted at the national level. MCHIP documented its experiences and lessons learned with these strategies and its bottom-up planning approaches in a How to Guide, and shared them with UNEPI, technical partners and other USAID funded projects to use and refine under future programs.

Following is the MCHIP Results Framework presenting MCHIP Uganda's objectives and indicators by objectives which were used to guide the monitoring, lessons learned and evaluation for MCHIP achievements in Uganda.

Project Results Framework

Goal: To sustainably strengthen the routine immunization system and increase vaccination coverage in Uganda

Objective 1: At national level, improve the capacity of UNEPI to plan, manage, implement, monitor, and coordinate support for routine immunization.

Objective 2: In selected Mission focus districts, strengthen DHT capacity to manage and coordinate support for immunization.

IR 1: National strategies, policies, guidelines drafted with MCHIP support

IR 2: UNEPI & DHTs assisted to improve quality of immunization management & services through operationalizing REC-QI approach

IR 1.1: EPI Technical Working Group fully functional

IR 1.2: Immunization data regularly reviewed, with performance feedback to districts & other stakeholders

IR 2.1: Immunization data actively analyzed & used, with feedback to HFs & non traditional stakeholders

IR 2.2: Supportive supervision system regularized to provide ongoing coaching to health workers

IR 2.3: Learning culture promoted through ongoing peer exchange of ideas & promising practices

Source of data for indicators 1 and 6: MOH Resource Center

Note: (**N**) = National indicator, (D) = district-specific indicator. Of the 11 indicators, there are 4 national-related and 8 district-related, with 1 indicator (1.2 & 2.4) being relevant to both national and district. There is one standard indicator (white), 2 context indicators (pink), and 8 MCHIP-specific indicators (light blue)

Major Accomplishments

Over the last ten years, Uganda has suffered challenges in delivering EPI services, resulting in a decline in immunization coverage and threatening an increase in vaccine preventable diseases. The resurgence of the wild polio virus in 2009, and outbreaks in both measles and hepatitis B in 2013, highlighted the need for urgent attention to strengthening Uganda's routine immunization platform. Building off of USAID's long-term commitment to strengthen immunization services in Uganda, MCHIP provided technical assistance to improve RI by implementing key technical activities from June 2012 – June 2014.

With just under two years implementing routine immunization system strengthening at national and district level, it would be presumptive to emphasize any performance outcomes relating to MCHIP. To truly examine outcomes of a system strengthening effort, more time is needed in order to gauge not just the gains made, but also the system's ability to maintain those gains as part of building its capacity towards robustness. Thus, the highlights below concentrate more on **process improvements**, with limited reference to outcomes and outputs.

MCHIP's Key Technical Priorities and Achievements

Operationalize REC-QI

MCHIP's emphasis is on operationalizing Uganda's national immunization strategy, Reaching Every Community, by introducing strengthening elements of Quality Improvement (QI) and Plan-Do-Study-Act performance improvement cycles, referred to as "REC-QI" by the MCHIP Uganda team. The REC-QI approach has a number of unique characteristics, which the MCHIP Uganda program utilized when building on the general REC approach:

- ➢ shifting the attitudes and long-held beliefs that "nothing can change" through peer sharing of successful small-scale solutions already proven to work in the local context and within local budgets (health facility and district)
- ➢ targeting under- and un-vaccinated children so that all areas of a district are reached by RI services
- ➢ prioritizing very limited resources by HFs sharing promising ideas with each other as a key method for assisting weaker performing areas to improve; maximizing use of resources through clarifying service catchment areas
- ➢ focusing on the district level and downward, a truly decentralized approach; and,
- ➢ flexibility for strengthening other primary health care interventions.

During this implementation period, MCHIP maximized learning and documented the minimum "package" of how lean the REC-QI approach can be while retaining critical elements and effectiveness, as well as how such a "lean process" or a "lighter version" can spread within a district and beyond to other districts. This required paying close attention to why a "change idea"[4] worked or not, and understanding the context behind a successful change—and possibly testing leaner approaches in relation to future scale-up. Given that the implementation time was too short for any significant impact, MCHIP instead focused on technical assistance to support districts to identify root causes of problems to be written in a

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[4] Any idea that is rapidly tested using QI methods, shows success, and is determined by a group of health workers to be viable and valuable enough to share with others; one such idea could be how to reduce long waiting times during an immunization session

positive idea, a change idea. Following is an example of this initial learning: *Root cause – lack of an EPI focal person at a HF; Change idea – establishment of an EPI focal person in the HF.* Focusing on rapid implementation and testing of this **change idea** is the initial foundation of how the REC-QI approach is implemented. If after testing the change idea, the problem is less or in some instances completely solved, them this becomes one of the successes of the model.

During the implementation period, MCHIP focused on lightening the REC-QI process, capturing lessons learned in a set of key technical steps to implement REC-QI. These technical steps were collected in a "How to Guide" and shared with program partners for input. The How to Guide is intended to serve as reference materials for district level managers, and help the MoH, District Health Teams and partners who work on district-specific adaptation of REC-QI during trainings and implementation activities. Updating the technical steps in the How to Guide, and finalizing the Guide with requisite annexes, will be completed under a follow-on project.

The following sections define in greater detail the key activities MCHIP undertook in Uganda, focusing on what was planned versus achieved, what the results were and how they were important to MCHIP's overall support to strengthen RI in Uganda.

Advocacy and Technical Support for RI with other USAID projects, MOH (besides UNEPI), and with medical/health institutions

In May, 2013, MCHIP Country Director participated in the Regional Workshop to revise the Medical and Nursing Curricula in Abidjan, Cote D'Ivoire in May 2013. As planned, and following the workshop, MCHIP presented the EPI prototype curriculum to the 6th National Principals for health training institutions conference 17th - 21st June 2013 held at Nile Resort Hotel Jinja: (90 principals from Uganda, Rwanda, South Africa, Kenya). The conference presented the step-by-step process of adapting and institutionalizing the EPI prototype curricula in Uganda.

- After the May 2013 Regional Workshop to revise Medical and Nursing Curricula in Abidjan, Cote D'Ivoire, MCHIP worked closely with the Ministry of Education and Sports (MOE&S) and the prototype committee to review the drafts of the revised medical curricula.
- MCHIP provided a consultant to support the technical review process of the Nurses/Midwives and Medical schools curricula. Because this process happens only every five years, USAID through MCHIP had an excellent opportunity to influence pre-service training. Future efforts should be made to ensure that the EPI curriculum is updated regularly.

Communications and Capacity Building

In May 2014, MCHIP supported finalization of the EPI policy that had been discussed in the Cabinet (May 28, 2014) and provided additional support such as supplying stationary to the MOH to prepare the Cabinet memo sent to each member. The policy provides ground for enabling laws and guidelines for EPI implementation in Uganda.

New Vaccines and Logistics

A PCV launch took place in April 2013 in Iganga District. To prepare for this launch, MCHIP provided training to 1,255 health care providers. Due to vaccine supply issues at the global level, PCV introduction was not rolled over to all districts in 2013, as had been planned.

However, it was eventually rolled over to all districts in 2014. Lessons learnt in PCV introduction will be captured post-roll out and will facilitate smooth introduction of other new vaccines in the future.

Peer Exchange Visits

To achieve results using REC-QI, MCHIP Uganda helped build the capacity of the DHTs so that they are able to provide long term and affordable technical and managerial support to the health workers in their district. In Uganda, DHTs assist with operationalizing the REC approach in the district, encouraging health units, health sub-districts, and districts to actively seek out and regularly share successful local solutions with each other. Key accomplishments in all five districts with REC-QI have been the activation of non-traditional stakeholders (e.g., sub county chiefs and other administrative/political leaders who influence health budgeting) and quality improvement teams (QIT) in health, improving regular use of data for decision making, and strengthening supportive supervision/coaching of districts and health sub-districts to health facilities.

Improved Use of Data

To support improved quality and use of immunization data at national level, MCHIP provided technical support to re-activate the quarterly review of all-district EPI performance through operationalizing WHO's RED categorization tool (this tool tracks trends by quarter of all districts in relation to DPT3 coverage and DPT1-3 dropout rates) and highlighting findings in the EPI newsletter pull out (see *Figure 5* below for an image of the newsletter pullout).

Also at national level, MCHIP supported a Data Quality Self-assessment (DQS) with follow up to address persistent data quality gaps. This led to an improved review of HF data in comparison to district and national data. MCHIP with AFENET led a process of lightening the DQS approach and integrating it into the routine supportive supervision checklist and process to continuously support data quality improvement. Through this process, MCHIP's work supported strengthening of the MoH Resource Center to conduct regular data quality verification exercises, and strengthening UNEPI's ability to track, share, and use quarterly district performance data trends.

At the district level, supporting improvement of quality and use of immunization data included:
- introduction and use of WHO's RED categorization tool for analyzing immunization data trends across all of its HFs
- incorporation of mini-data quality assessments during supportive supervision
- building HMIS/biostatistician's ability to use quality improvement methods in addressing persistent data quality/use problems
- building health worker skills in data visualization and use through charting of monthly EPI data in cumulative and non-cumulative graphs using locally available resources, and,
- introducing and activating quality improvement teams at district and health facility levels, who use PDSA cycles where data was reviewed, analyzed, and used for testing ways to solve persistent management and service delivery problems

In all five districts, HFs used QI and PDSA cycles to improve vaccine and cold chain management by addressing immunization challenges. This included having districts focus on better management of their cold chain. As a result, all five districts used PDSAs to

conduct a gas cylinder inventory, set up a regular gas cylinder tracking system, and purchase through local funds gas cylinders to ensure each HF had two per EPI gas fridge so that all gas cold chain refrigerators have a backup system to ensure vaccines could be kept between 2-8 degrees Celsius to remain potent.

Figure 3: Snapshot of the EPI newspaper "pull out" cover page

Quarterly Review Meetings

MCHIP's baseline report showed that only four irregular quarterly review meetings (QRMs) had been conducted prior to 2012. During the MCHIP program, MCHIP promoted and helped to facilitate 25 QRMs at district and health sub district level which resulted in an increase in sharing of successful experiences. QRMs have facilitated involvement and provision of feedback to leaders and other partners; the joint discussion of challenges and solutions enabled all participants to learn from each other's experiences.

Photo 1: The DHO Kabale district addressing participants of a district quarterly review meeting in Kabale

Trainings to Strengthen DHTs

MCHIP supported the training of two DHT members from each district as national trainers in Operation Level (OPL) training of health workers in EPI. The national TOT was followed by several district trainings where the district trainers were taking a lead in delivering the training, backstopped by other National trainers.

Supportive Supervision and Active Monitoring

MCHIP provided technical assistance to strength supportive supervision and active monitoring of immunization service delivery strategies. MCHIP with UNICEF, WHO and AFENET supported MOH/UNEPI to revitalize a focused support supervision process that focused on priority problems by supporting a strong preparatory process that includes adapting a shorter support supervision checklist. The supportive supervision planning meeting, basing on previous reports and experiences, identified a few areas/themes to support during that SS visit; the checklist is still being finalized to incorporate this input and is likely to be finalized after the end of MCHIP in June 2014.

Engaging the Community

MCHIP supported greater involvement of communities, local leaders and caregivers in planning, managing, monitoring, and utilizing RI services in the selected districts and their HFs. During the micro-planning meetings, MCHIP shared baseline data with three months of data analysis, with DHTs, leaders – (both political and civil), development partners working in the district and health facility staff all of whom worked together to analyze the situation, identify current solutions and problems affecting RI, analyze the priority problems for root causes and then, came up with possible solutions. Issues differed from district to district and, broadly summarized, included poor access to and utilization of services and poor data quality. Issues were prioritized by district, with solutions varying by district and by issue. Following are examples of activities that MCHIP conducted to better engage the community:

➢ **Plan-Do-Study-Act (PDSA)**
   PDSA is a rapid quality improvement plan cycle that allows rapid implementation of proposed solutions to problems and can be vetted for adoption, adaptation/further refinement or abandonment. Communities are represented at the HF Quality Work Improvement Team (QWIT) meetings. At the sub-county level, Work Improvement Teams (WIT) of around 15-20 members were established, including sub-county leaders, VHT members and opinion leaders in the area all of whom supported the PDSA cycle.

➢ **Micro Mapping**
   Health facility workers met with VHTs of their health facility catchment area to identify outreach locations and villages served at each outreach or static post. In the process of micro-mapping, hard to reach or unreached populations and communities were identified and either alternative immunization delivery strategies were planned or communities were given to another health facility that has the capacity to or is able to access the area. The VHT's, who are members of the QWIT, decided on outreach location, outreach posts, and schedule of service delivery.

➢ **Two-way Feedback**
   On a quarterly basis, the VHT met with health workers that serve them to provide two-way feedback: health workers giving immunization coverage, defaulters, technical updates in EPI program, whereas the VHT give HWs reports from the parents and communities they serve, discussing and agreeing on future plans to improve RI and linking communities and services. This process is slowly working on unraveling the long

history of "data defying gravity" and always being fed up the system, but never coming back down for evidence-based use at local levels.

Improved RI Coordination: Partner and Stakeholder Engagement

As part of REC-QI, MCHIP supported improved RI stakeholder coordination, collaboration and resource mobilization at the district level using the QRMs (every three months) as a platform. MCHIP encouraged UNEPI and Districts to invite other development partners to participate in planning, review and when possible, in implementation of RI activities. Improved Integration of activities at district level:

➢ Mapping of populations against static HF facilitated districts and HFs to calculate target populations for pregnant mothers, expected deliveries and through VHT mobilization for MCH services
➢ District and sub county WITs and QITs join together in the planning, monitoring and evaluating committee for all health activities, primarily established to support RI

EPI development partners, DHTs and leaders (civil and political – non-traditional stakeholders) work together at the district level to solve EPI challenges:

In Nyamiryango HC II Kabale district, EPI problems had gone unaddressed for a very long time and the staff had given up. However, in a quarterly review meeting the HF problems were raised and the DHO plus the political leaders solved persistent critical impediments and vaccination resumed.

In Kapchorwa, Reproductive Education and Community Health (REACH) offered airtime on local radio to support mobilization of parents for RI and the Red Cross offered to support mobilization through their field agents. District and sub-county leaders offered to buy bicycles or repair existing ones to facilitate functionality of outreaches.

"The way we have benefited from MCHIP is that we have been taught to plan and now we do micro-planning to see how to improve our areas. We found that some sub-counties have very good coverage and others are doing very poorly...This is the beginning of the success story," Dr. Muwanguzi says with a smile. The transparency and sharing of performance information concerning how well each health facility, sub-county, HSD and then district is doing with immunization coverage has enabled community and district leaders to be in agreement regarding the priority areas of focus."

Photo 2: *Dr. Muwanguzi, DHO for Iganga District, introducing MCHIP at training for new health workers in Iganga*

Photos 3 & 4: *MCHIP Country Director receives a certificate of recognition from the District Secretary for Health, Kabale district*

Cross-Cutting Themes

REC-QI, through macro and micro mapping of communities against health facilities and by identification of unreached populations, opens a clear path to Reaching Every Child with health services. From the start of the MCHIP Uganda program, MCHIP placed emphasis on planning for scale-up with dedicated involvement of community as a central theme.

Scale-up of REC-QI

MCHIP's implementation of REC-QI has enabled lessons learned for how to engage the community and how to prepare for scale-up in MCHIP districts, in new districts and nationwide. Given MCHIP Uganda's limited implementation time frame, all activities in Uganda were implemented using a long term, sustainable perspective. To achieve future maximum potential at scale, MCHIP focused on 'lightening' the REC-QI model by reviewing and revising the key technical steps needed to introduce, implement and sustain the REC-QI model. By lightening the approach, MCHIP was able to ensure it is affordable and sustainable when implemented at scale, essential pre-requisites for wide scale up of the approach, which MCHIP recommends be done through a follow on grant and with close coordination with partners.

One of the key lessons that MCHIP captured during this implementation period is that the REC-QI approach and the processes are *content neutral* as they can be applied to any health service thereby increasing potential to be a hub for health care evolution.

Community

In Uganda, EPI is a very technical, yet at the same time, it is a vertical program incorporating various levels and constituents within society. It requires communication and collaboration from everyone in the community in order to function optimally. As with many programs, country level ownership is important for success of the program. MCHIP thus implemented the program with a range of support from the community including district health managers, district health teams, other program partners, including the MOH and UNEPI and in constant collaboration with other national and global stakeholders. Although health facility workers are responsible for day to day implementation and evaluation of EPI, district governments, other local leaders, and parents make extensive DPT3 coverage possible. These key stake-holders influence resource allocation, prioritization of programs, information dissemination. Parents are also the ultimate decision makers regarding whether or not a child gets immunized and limiting their role in EPI to that of consumer is a mistake. Without the buy-in of each of these groups, the EPI program would fail.

Each stakeholder involved in EPI, or any health program, may measure quality differently. A health care provider may think that the ultimate measure of a good quality immunization program is a very high percentage of children are receiving DPT3. From the baseline survey MCHIP conducted, it was learned that caregivers prefer one-on-one sessions during their visits to health facilities, that health facilities are often far away, that they like to communicate with VHTs and religious leaders and through talk shows. This information was shared with each district to consider when conducting their PDSA planning. Importantly, MCHIP conducted the micro-macro mapping exercises to help better link the community to their respective health facilities and VHTs. Because parents' reported a gap in how they access communication on EPI and more importantly, health services, MCHIP learned that there is an opportunity for greater involvement from parents and the community.

In including parents and other community members in the EPI program outreach, it is important to take into consideration where meetings will be held. For example, if the activities take place in a church, some Muslim community members may not feel comfortable. It is important to make inclusive decisions so each sector of society is included in decision making and feedback, because overall community support is the goal.

REC-QI involvement of non- traditional stakeholders (political and civil leaders, VHTs plus other partners working in the district) in planning, implementation, monitoring and sharing EPI data have been an avenue which supports overcoming many of the RI obstacles that could rarely be taken as key issues by health workers during their planning. As mentioned above some non- traditional stakeholders have contributed resources to RI, a sign of ownership of the program.

A Data Quality Self-assessment (DQS) is a national review ideally conducted annually to assess quality of EPI data and the system that collects and processes it up to national data. However, prohibitive costs of such a review often impede it being conducted on an annual basis in many countries. To attempt to routinely and systematically focus on data quality from collection, processing up to national level, REC-QI developed DQS (DQS routine) to be able to incorporate streamlined elements of it into routine supportive supervision and ensure health facility staff check their data collection, quality, and processing on a regular basis. Districts using the DQS routine approach are developing PDSAs, led by district biostatisticians, to address challenges affecting EPI data quality. MCHIP and CDC AFENET have been tasked by the national EPI TWG to harmonize their related approaches and present to the TWG for discussion and possible adoption of the harmonized approach by Uganda's MOH.

RED categorization is a standard method of assessing EPI performance and identification of major problems (by access and utilization). The REC-QI implementation has facilitated enhancement of the RED tool to facilitate achievement of all of its components at district level and below (where the tool is most useful). Initially used at national level to assess districts performance, the tool has been enhanced for use in regions, districts, HSDs, sub-counties and individual health facilities through continuous improvement based on stakeholder feedback. Currently the tool is facilitating MOH/UNEPI to:

• At **national** level, assess EPI performance of districts, regions; each area performance trends and giving feedback to stakeholders through the quarterly Newspaper pullout, shown in Figure 3 above. The tool has facilitated the EPI managers to localize none or partially vaccinated children by region and district to facilitate focused interventions.

• At **district** level, with community macro and micro mapping, the RED categorization tool has been enhanced to regularly (quarterly) assess EPI performance of individual HFs, sub-counties, HSDs and district, as shown in Figure 4 below.

The analyzed local EPI data is used during district QRMs to give feedback to health facility managers, district and sub-county leaders (civil and political) and development partners working in that district. EPI performance of each level in the previous quarter coupled with trends of performance of the previous 1-3 quarters is shown in Figures 6 and 7 below. The district QRM thus forms the main forum where all EPI stakeholders (including non-traditional stakeholders) review, discuss and come up with possible solutions for EPI challenges.

The district QRM has also facilitated mobilization/interest by non-traditional stakeholders to immunization, supports local data use for management decisions, resource mobilization and forming of a strong team for EPI plus strengthened communications among EPI stakeholders. Photocopies of the RED categorization tool are given to HFs, district and sub-county leaders as feedback during the QRM.

Figure 4: Analysis of Health Facility Data: Rukungiri District

Analysis of Health Facilty Data

Name : RUKUNGIRI district Jan-March 2013 FY RI data

Goal : Increase immunization coverage to at least 90% with all vaccines in every district

Criteria
DPT1 coverage
90%
Drop-out Rate
10%

Area Name	Compile population, immunization coverage data in previous 3 months													Analyse Problem			
	Target Pop. 1 Qtr	Doses of vaccine administred			Immunization coverage (%)			Unimmunized (No.)		Drop-out (rates %)		Identify problem		Categorize problem
		DPT1	DPT3	Measles	DPT1	DPT3	Measles	DPT3	Measles	DPT1-DPT3	DPT1-Measles	Access	Utilization	RED Category 1,2,3, or 4
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
District	3,363	3,428	3,367	3,371	102%	100%	100%	-4	-8	2%	2%	Good	Good	Cat. 1
Kebisoni HSD	697	692	654	634	99%	94%	91%	43	63	5%	8%	Good	Good	Cat. 1
Buyanja S/C	400	336	294	261	84%	74%	65%	106	139	13%	22%	Poor	Poor	Cat. 4
Buyanja	212	165	149	162	78%	70%	76%	63	50	10%	2%	Poor	Good	Cat. 3
Kasheshe	31	100	87	53	326%	284%	173%	-56	-22	13%	47%	Good	Poor	Cat. 2
Buhandagazi	40	22	19	23	55%	48%	58%	21	17	14%	-5%	Poor	Poor	Cat. 4
Rubanga	69	42	35	20	61%	51%	29%	34	49	17%	52%	Poor	Poor	Cat. 4
Rwamuhima														
Kitojo														
Nyakabungo	31	7	4	3	23%	13%	10%	27	28	43%	57%	Poor	Poor	Cat. 4
Kyamakanda														
Kafunjo														
Kebisoni S/C	297	356	360	373	120%	121%	126%	-63	-76	-1%	-5%	Good	Poor	Cat. 2
Kebisoni	140	132	134	128	94%	96%	92%	6	12	-2%	3%	Good	Poor	Cat. 2
Ndama	32	48	61	64	149%	189%	198%	-29	-32	-27%	-33%	Good	Poor	Cat. 2
Garubunda														
Kahengye														
Karuhembe	77	140	111	149	181%	143%	193%	-34	-72	21%	-6%	Good	Poor	Cat. 2
Bikungu	47	36	54	32	76%	114%	68%	-7	15	-50%	11%	Poor	Poor	Cat. 4
Nyakazinga														
St. Mark Mabanga														

The district EPI managers have found the RED tool to be very useful because it facilitates localizing EPI challenges for focused attention. For example, as shown in Figure 5 below, Busia district has 445 children who missed measles vaccination: a quick scan through the column quickly reveals that the vast majority of the children (401) are located in Samia Bugwe South HSD, with large numbers in Masinya S/C, Bumunji HC II (183) and Majanji S/C, Majanji HC II (114). Since the specific parishes served by the health facilities are known through community mapping, the DHT is able to focus intervention in the specific parishes guided by the in-charges of the health facilities.

Rukungiri District Progress - EPI performance 2012/13	DPT3			
	Q1&2	Q3	Q4	Cummulative
District	68%	100%	90%	82%
Kebisoni HSD	50%	94%	101%	74%
Buyanja S/C	34%	74%	67%	52%
Buyanja	27%	70%	61%	46%
Kasheshe	147%	284%	251%	207%
Buhandagazi	24%	48%	25%	30%
Rubanga	31%	51%	73%	47%

It is planned that the tool be linked to the national DHIS II so that data entered in DHIS II is directly updated and analyzed without too much time spent on data entry each month. The enhanced district tool has a generic template that can be used to scale up into other districts. Figure 6 below shows an example of an auto-generated coverage chart, while Figure 7 shows one for dropout monitoring.

Figure 6: District DPT1 Immunization monitoring chart- FY 2013/14

District DPT1 Immunisation monitoring chart - FY 2013/14

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Cummulative	25	50	75	100	125	150	175	200	225	831	1,759	2,431
Target per month	104	208	312	416	520	624	727	831	935	1,039	1,143	1,247
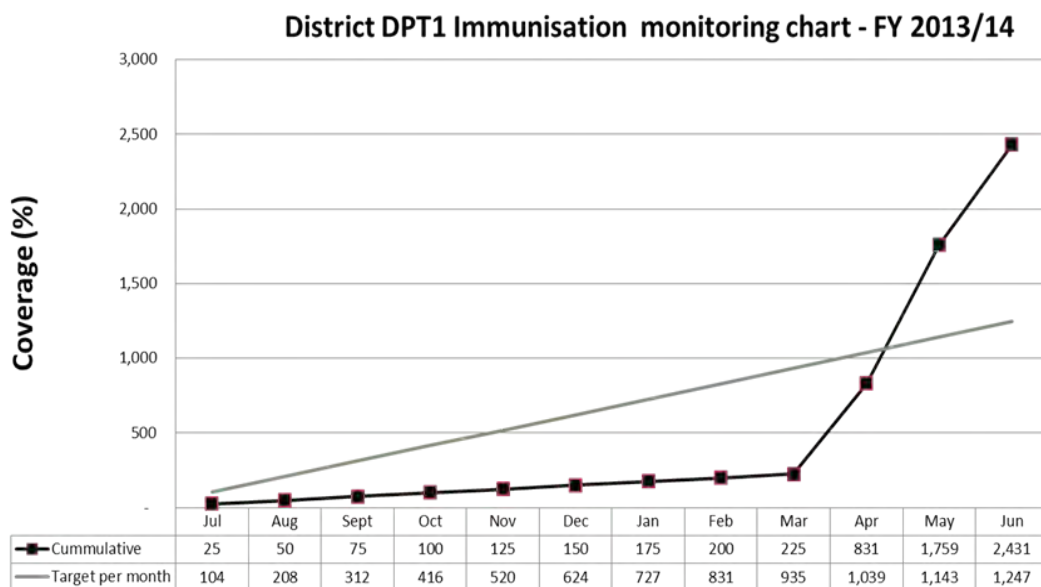
Figure 7: District Monitoring chart for DPT 1-3 dropout rate- FY2014/15

District monitoring chart for DPT 1-3 drop out rate - FY2014/15

Month	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
drop-out rate	0	0	0	0	0	0	0	0	-4.950495	7.9741379	-9.52381
Limit-10	10	10	10	10	10	10	10	10	10	10	10
Limit-0	0	0	0	0	0	0	0	0	0	0	0
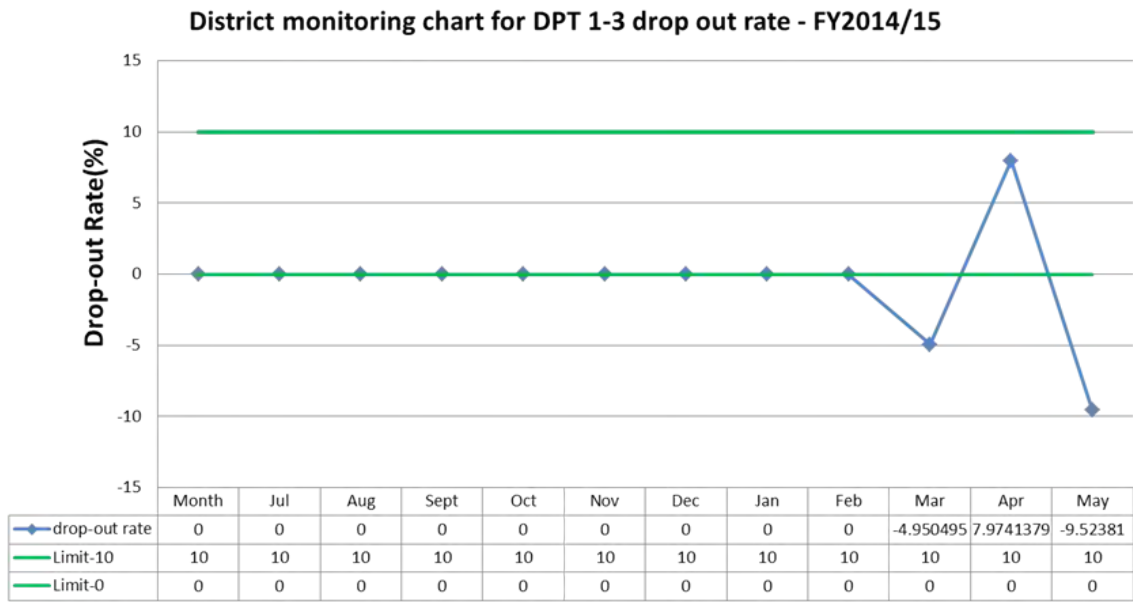
Recommendations and Way Forward

Lessons Learned/Recommendations

Lessons learned and key recommendations from this two year project include:

1. **REC-QI must take a methodical approach:** MCHIP Uganda developed and implemented the REC-QI strategy in five districts. Evidence to date, despite the short (two-year) timeframe, indicates that the approach is moving districts towards the intended objectives of RI system strengthening by focusing on systematic process improvements. If the intention is a development-minded systems-building approach to strengthen and maintain RI gains which are sustainable and affordable, a sufficient amount of time is needed for REC-QI concepts to take root; a minimum of three PDSA cycles of improvement is needed for a critical mass in any location to grasp, value, and become advocates for QI methodologies, which can serve to improve RI.
   - ➢ **Recommendation: To institutionalize REC-QI in medium-to-weak district health systems, approximately 20 months of technical support is needed.**

2. **A "lighter" approach is more sustainable:** Taking lessons learned from implementing REC-QI during this implementation period, and taking into account all the revisions to the methodology done during implementation exploration, a "lighter" REC-QI approach has been developed, to ensure that the program can be scaled up to additional districts in Uganda and introduced to other countries. This lightened process is defined as implementing REC-QI using existing government resources – time, staff, funds and structure. The REC-QI strategy is centered on the three essential processes: data analysis and use; supportive supervision; and quarterly review meetings along with monthly meetings (see Figure below).
   - ➢ **Recommendation: Scale up the "lightened" REC-QI implementation approach to more districts in Uganda and to other countries.**

Keeping it "light"

RED-QI is "light" if it is implemented using **existing government resources** (time, staff, funds, structures); it is "light" if it:

- ✓ Fits within the time-availability of staff
- ✓ Is within the capacity of average health staff
- ✓ Does not require costly equipment or added structures
- ✓ Does not require routine external funding

It is "light" when RED-QI is centered on the 3 ESSENTIAL processes

3. **Context is king:** The local context, culture, structure and strength of each district health system, and absorptive capacity of health managers and workers, matters. REC-QI has been designed to incorporate QI concepts that value contextual adaptation to fit local scenarios
    ➤ Recommendation: Ensure local context is taken into consideration when introducing REC-QI and throughout implementation.

4. **Foster community ownership:** Through MCHIP's experience, Quarterly Review Meetings (QRMs) proved to be good "learning session" venues to share key problems and successes, and generate brainstorming opportunities. For example, during QRMs, districts learned to solve their own problems without waiting for the MOH at the central level to solve supply chain management issues. Regular QRMs with DHTs and all EPI stakeholders to discuss EPI issues does not only ensure that stakeholders are on the same page regarding what solutions should be implemented to improve the EPI system, but also facilitates that each stakeholder will understand his/her roles and responsibilities in the effort to solve the challenges discussed. This bolsters team work, ownership, feedback and awareness, holds stakeholders accountable and minimizes misunderstandings, therefore strengthening the EPI system.
    ➤ Recommendation: Build teamwork and ownership through QRMs to support the DHT to lead the REC-QI process.
    ➤ Recommendation: Use PDSA cycles to improve how districts forecast and quantify their own vaccine needs

5. **Build in accountability using a practical macro and micro mapping process:** To identify potential duplication of services, streamline efficiencies, allow supervisors to better understand what each HF was doing, and to reach areas not yet served, mapping proved to be a critical operational step; macro and micro mapping promoted accountability since it provided supervisors and managers with a clear picture of which HFs were providing what kinds of services to which communities and how frequently those services were provided. Clearly identifying catchment areas/target populations: 'Mapping' for individual health facilities coupled with continuous assessment of performance using the enhanced RED categorization tool is essential to REC-QI's success
    ➤ Recommendation: Use macro and micro mapping as a key tool when implementing REC-QI

6. **Explore and strengthen capacity at district level:** It is critical that programs understand the capacity of the Health Sub Districts and Health Facilities to solve their own problems associated with RI. If there are challenges that cannot be solved at the district, then advocacy with district administrative leaders should be a key focus before partners offer to fund solutions.
    ➤ Recommendation: Support Health Sub Districts and Health Facilities to solve their own problems associated with RI at the district level; if problems persist, advocate with district level administrative leaders to help foster solution-seeking

7. **Improvements should focus as much on management as on service delivery:** Many QI approaches ignore strengthening of DHT and HSD management functions; PDSA cycles

can be equally used to solve persistent management functions (e.g. weak supportive supervision system) as service delivery problems (e.g. high dropout rates)

> **Recommendation: Use the basic REC-QI components to assess and adapt management changes as well as improve service delivery problems.**

8. **REC-QI is scalable:** The basic components of REC-QI, such as micro-planning, root-cause analysis, prioritization, implementation through rapid cycles (PDSA), focused supportive supervision, and quarterly program review with stakeholders, are all elements based on leveraging existing system structures, making REC–QI potentially scalable to all health and other programs within and outside the country. Specifically, and once REC-QI has been the REC-QI approach can be applied for strengthening other primary health care (PHC) interventions.

> **Recommendation: Consider using REC-QI elements to strengthen other health interventions; not only RI but also PHC interventions**

9. **On-the-Job supportive supervision training** is one element that is vital for capacity building, yet is often overlooked. It is also critical in facilitating introduction of quality technology which is affordable and practical for the health facility. Focused supportive supervision is a key channel for many capacity building programs, important in addressing various challenges. Within this framework, health facility staff are able to address the issues they feel should be given highest priority for EPI implementation.

> **Recommendation: Build on-the-job supportive supervision into REC-QI programs as it will build staff capacity, and provide an enabling environment for staff to raise and solve issues**

10. **Refine key steps to implement REC-QI:** Use the technical steps as a starting point for development of a larger, more in-depth "How to Guide" which can be used to expand to other districts in Uganda or to introduce REC-QI in other countries.

> **Recommendation: Develop the expanded "How to Guide" using the technical steps developed by MCHIP under this program to support scale up in Uganda and in other countries.**

Annex 1: Indicator Matrix

5.0 PROGRAM INDICATOR PERFORMANCE TABLE

Indicator No	Indicator Source	Performance Indicators	Indicator Definition	Data Source	Disaggregated by	Baseline Year	Baseline Value	FY13 Target	FY 13 Achievement	FY 14 Target	FY 14 (Q1&2) Achievement
		OBJECTIVE 1									
1.1	Context	Percentage of children age 12-23 months who are fully vaccinated	Percentage of children who received a vaccination against tuberculosis (BCG), three doses each of the DPT-HepB +Hib and polio vaccines and a measles vaccination.	UDHS 2011	None	FY 2012	52%	NA		NA	
1.2	Context	Number of people trained in child health and nutrition through USG-supported programs	Number of people (health professionals, primary health care workers, community health workers, volunteers, non-health personnel) trained in immunization-related topics through USG-supported programs during the reporting year, disaggregated by male and female (training will include (a) specified learning objectives; (b) some sort of curriculum; (c) some method for tracking that participants have indeed participated)	Project reports	Gender	FY 2012	0	120	12512[5]	530	1894
1.3	MCHIP	Number of EPI quarterly newsletter/dashboard published by UNEPI	Number of newsletters with all-district EPI data comparisons published by UNEPI with MCHIP technical support	Project reports	None	FY 2012	0	4	4	4	2
1.4	MCHIP	Number of EPI technical coordination meetings	Number of monthly meetings conducted by UNEPI with EPI technical partners	UNEPI Mtg minutes	None	FY 2012	1	10	9	10	5

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[5] Both national and district based training included: Biostatisticians training to follow up 2013 DQS recommendations, VHT and OPL. Training activities planned for Q1 & 3 were done in Q2 to fit within the implementation period to allow MCHIP closing process. Due to demand by districts and MOH/UNEPI, MCHIP used the available plus savings to do more trainings than initially anticipated.

Indicator No	Indicator Source	Performance Indicators	Indicator Definition	Data Source	Disaggregated by	Baseline Year	Baseline Value	FY13 Target	FY 13 Achievement	FY 14 Target	FY 14 (Q1&2) Achievement
		OBJECTIVE 2									
2.1	Standard	Number of children who received DPT3 by 12 months of age in USG-assisted programs	DPT refers to a class of combination vaccines against three infectious diseases in humans: diphtheria, pertussis (whooping cough) and tetanus. the vaccine components include diphtheria and tetanus toxoids, and killed whole cells of the organism that causes pertussis (wp). to be fully protected, children must receive three doses of the vaccine, administered at the ages of one month, one month and a half and three months. this indicator captures the number of children who have received all three boosters through USG-assisted programs	MoH administrative reports	None	FY2011 (UNEPI)	52,002	56,000	84020	70,000	Annual
2.2	MCHIP	Number of review meetings conducted by districts with its health facilities	Number of health review meetings conducted vs. planned by districts, with non-traditional stake holders (CAO, District chair person, LCIII C/Persons, SAS, IPs etc.).	Project reports	None	2012	4 of 20	20	15	18/20 = 90%	10
2.3	MCHIP	Number of districts with annual drop-out rate (DPT1 - DPT3) 0-10%	Number of select districts with DTP1-3 dropout rate below 10% annually (without a decrease in DTP1). (All districts have dropout rate greater than 10%)	MoH administrative reports	None	FY2011 (UNEPI)	1 of 5	3 of 5		-	Annual
2.4	MCHIP	MCHIP: # of districts with functional tracking system for gas cylinder	Number of districts who have an active (checked monthly) tracking system for gas cylinders of all of its health units; for districts using gas cylinders, this means that the district knows how many cylinders it has, where they are, and who is responsible for the cylinders in each health unit	Project reports	None	FY2012	0	5 of 5	5	5 of 5	5

Indicator No	Indicator Source	Performance Indicators	Indicator Definition	Data Source	Disaggregated by	Baseline Year	Baseline Value	FY13 Target	FY 13 Achievement	FY 14 Target	FY 14 (Q1&2) Achievement
2.5	MCHIP	Number of peer exchanges, by health & community	Number of peer exchange visits measured by # of units represented by the two categories of health worker and community volunteer; e.g. if there is one site visited but 5 DHTs represented, total is 5 peer exchanges; if there are 4 HUs visiting one site with 4 health staff and 4 community volunteers represented, total is 8; for DHTs, HSDs and HUs, health workers are the representatives, for communities, representatives can be VHTs, HUMCs, volunteers, traditional/religious/political leaders (e.g. any non-health staff who are systematically engaged in supporting health)	Project reports	None	FY2012	NA	10	14	20	90

Annex 2: Success Stories

I. INVOLVEMENT OF LOCAL LEADERSHIP HELPS IMPROVE IMMUNIZATION SERVICES

The Nyamiryango HC II experience in Kabale District, Uganda

"Last year I did not carry out routine immunization (RI) for 6 months" says Alex Kwikiriza, In-charge of Nyamiryango HC II located in Butanda Sub-county, Ndorwa West Health Sub District (HSD) in Kabale district. "My health facility under performance could not be noticed because the district health office could not assess performance of individual health facilities, but sub-counties, due to lack of clearly demarcated service areas for each health facility, and thus target populations."

Alex Kwikiriza is an enrolled comprehensive nurse and has been working at Nyamiryango HC II for two years. In the last 11 months, he has seen great improvement in RI at the health center—an activity that had previously been abandoned completely.

MCHIP/Uganda facilitated Kabale district local government to conduct macro mapping of populations against PHC health facilities throughout the whole district. Mapping facilitated the District Health Team (DHT) to clearly identify the service areas of each health facility and target population. Using the target population and local EPI data, each health facility's performance for six months was assessed. Best and worst performing health centers on RI were identified using a national RI categorization tool being encouraged by the Uganda National Expanded Program on Immunization (UNEPI) and partners.

Alex noted, "Kabale DHT, with MCHIP/Uganda support, organized a district quarterly review meeting attended by political and religious leaders and health workers from all static health centers in Kabale district. It was found out that my health center had not vaccinated any child for the past 6 months."

"The district Chairperson asked me to stand amidst the meeting to explain why my health facility had not vaccinated a single child in the past six months despite having all that it takes to vaccinate children. "It was a hard moment for me! They also showed me the effects of this poor performance. I was very touched and ashamed to be the in-charge of a health facility performing poorly and letting down the whole district."

Alex continued, "The district chairperson asked me to go to his office and discuss the challenges I face in the health facility and come up with solutions. As a result of this meeting, Nyamiryango HC II RI

Alex Kwikiriz, In-Charge of Nyamiryango HC II

challenges were put in the spotlight of both political and health leaders of the district. I met with the district chairperson, and district health officer explained to them the various

challenges faced by the health facility. Then, these challenges were systematically addressed."

His face beaming with confidence, he says, "I am happy to note that after this meeting, the following achievements and successes have been registered at the health center. In September 2013, Nyamiryango HCII successfully immunized 79 babies from birth to one year. In October, we have immunized 121 babies from birth to one year from both static and outreach sites. In July and August, Nyamiryango carried out one outreach session each month, and in September and October, two outreach sessions were carried out each month." All of this was done using existing resources at the health center.

 "I thank MCHIP/Uganda for coming in, for without their intervention, Nyamiryango to date would still not carry out vaccinations. We now know which villages to focus on and our target populations, we track and access and utilization issues and follow-up in strengthening immunization. MCHIP/Uganda has also helped us in identifying our immunization needs and challenges and we also understand that each health facility is accountable for providing health services to their identified community." Alex further asserts that, "through the continuous mentorship and training I have received over the past year from the DHT and MCHIP, the immunization rates of Nyamiryango HC II have steadily gone up and there is a great improvement in the service delivery at the health center."

Alex's summary of what has changed in the past 11 months:

- *To address the storage problem of vaccines, the district has provided solar energy for the HC II. The fridge is fully functional and vaccines are brought on time and stored safely.*

- *The DHT has been routinely following our performance and frequently checking performance during supportive supervision.*

- *A support staff from HC III has been brought to assist with both static and outreach immunization sessions; we usually pay her from our PHC funds. We also have a retired nurse who is a volunteer vaccinator who comes and assists with RI sessions on the days when we have static and outreach services. She is paid a small stipend for her services from our PHC fund. This has reduced my work load at the health center.*

- *There has been sensitization of the community on RI services from both political, religious leaders and health workers and the parents and care takers of children are happy that we are immunizing again.*

- *Village Health Team (VHT) coordinators have been oriented to RI and they assist with mobilization of communities to attend the outreach sessions. The VHTs are given an allowance for their services from our PHC funds.*

- *In addition, a Quality Improvement (QI) working team comprised of sub-county leaders, Community Development Officers, Health Assistants, in-charges of health facilities and focal points for immunization, and parish coordinators (total of 20 people) held a sub-county review meeting supported by the DHT and MCHIP. We identified our problems, prioritized three major problems where we developed an aim, some ideas to make changes to, and indicators to measure how well our ideas are solving our local problems.*

II. DATA FOR ACTION: ONE DISTRICT'S EXPERIENCE WITH UNDERSTANDING AND USING LOCAL DATA TO STRENGTHEN THE ROUTINE IMMUNIZATION SYSTEM

An example from Rukungiri District Health Office

"Last year we were at a percentage of 62% for DPT3 immunization coverage (third dose of the diphtheria-pertussis-tetanus vaccine) and we were not really performing well. We didn't know how to address this issue," says Sr. Katunguka Florence, a District Nursing Officer in-charge of maternal and child health in Rukungiri District in southwestern Uganda. The approach of macro mapping is starting to show favorable outcomes in other districts where MCHIP is supporting its introduction.

"I used to receive data on immunization from different health centers, but I wasn't able to know which health center was performing well and which one was letting the district

Sr. Florence Katunguka-District Nursing Officer in Rukungiri, at an MCHIP training meeting

down." She further explained, "MCHIP came in January 2013, and when we together reviewed our performance using our local data, we realized we were performing poorly. We were also able to identify good and poor performing health facilities. MCHIP then supported us in identifying and prioritizing key problems which were leading to poor performance." Rukungiri District has an estimated population of 326,000 people. Hilly terrain characterizes about 90% of the district. Because of the terrain, most of the people in Rukungiri District have poor geographic access to health care and the available 88 public health facilities are understaffed making it difficult for populations to access quality and timely health care. With support from MCHIP, in January 2013, the district began analyzing its local data on routine immunization. The results showed that Rukungiri District had both poor accessibility (as measured by DPT1 coverage) and poor utilization of RI services (as measured by those who are vaccinated by DPT1 but do not complete the third dose of DPT3, see following figure. But also, importantly, the trend in coverage over the past seven years showed very uneven progress—even an overall downward trend; when coverage has improved, it then stagnates or declines shortly thereafter. Aside from improving data quality, one of the key challenges Rukungiri faces is maintaining its gains in immunization coverage once it has made improvements. To do this requires a district health team consistently committed to analyzing and using their local data, and to work with its health units to make continuous changes based on the evidence they are seeing. As part of initiating a review of local data, Florence notes:
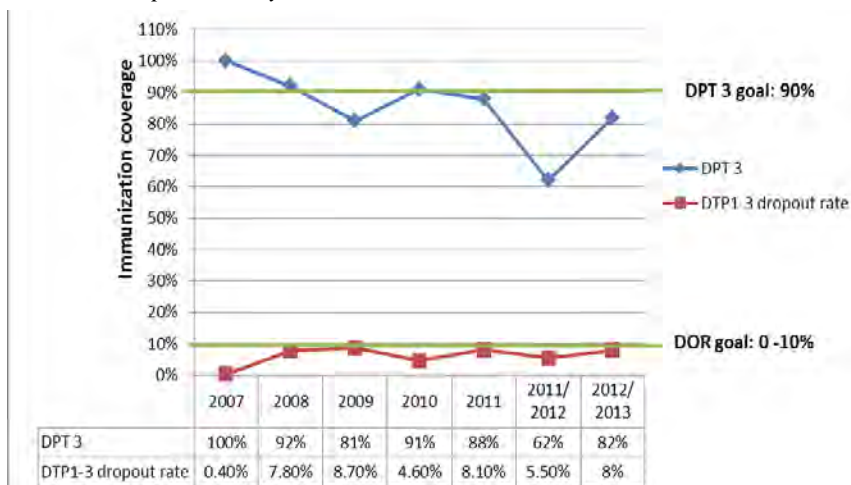
> "MCHIP specifically helped us do what is called 'macro mapping', in which the district worked with health facilities to ensure that health facility catchment areas are mapped out to clearly show which parishes are served by each health facility. This helped us a lot at district level, as now we know the target populations for each health center and its level of performance. In addition, this has helped us to engage

each health facility and sub county in identifying their particular problems, possible solutions, and plans to change the performance".

Figure 1: DPT3/Penta3 coverage and DPT1-3 dropout rate trend over past seven years

	2007	2008	2009	2010	2011	2011/ 2012	2012/ 2013
DPT 3	100%	92%	81%	91%	88%	62%	82%
DTP1-3 dropout rate	0.40%	7.80%	8.70%	4.60%	8.10%	5.50%	8%

Source: Rukungiri district HMIS data
NB: MCHIP started supporting activities in Rukungiri in January 2013

She adds, "Through a series of district quarterly review meetings supported by MCHIP, and attended by all health facility in-charges, district and sub county political and civil leaders, local data analyzed and information generated is discussed and shared Challenges at different levels of the health system are jointly identified, small-step solutions are suggested, and with support from the district and sub-county leaders it is agreed that the EPI focal person shall oversee implementation of the action points. This has resulted in motivating staff to work hard and also come up with innovations to improve routine immunization with very little added external funds."

"In one year, with improved planning and follow up we are now at 82% DPT3 coverage as seen in fiscal year 2012/2013, compared to last fiscal year when we were at 62%," Florence concludes while wearing a smile.

Yes, the work has begun, but it is only the beginning. Can Florence and the Rukungiri team maintain and make further sustained improvements to the efforts done in 2013? Stay tuned!

Annex 3: List of Presentations at International Conferences and Publications

1. Presentation of the WHO EPI prototype curricula to the 7th International Conference of Principals of Nurses/Midwives and Paramedical training institutions, Jinja Uganda

Annex 4: List of Materials and Tools Developed or Adapted by the Program

"Enhanced Reaching Every District (RED) Categorization Tool: Analysis of EPI data at National and district level to assess performance of the districts and regions at national level, and health facilities, Sub-counties, Health Sub-counties (HSD), and the district at district level" (DRAFT)

Uganda EPI prototype curricula for Nurses/Midwives and medical pre service training schools. The WHO EPI prototype curricula was adapted to Uganda and oriented towards competence based as opposed to theory based. Tutors and lecturers training guides to facilitate use of the adapted EPI prototype curricula were developed. (DRAFT- final name to be given by MOE&S)

Adapted the *Operation level training materials in EPI (Immunization In Practice (IIP) Uganda)* to include new vaccines and other updates (DRAFT)

Developed/adapted training materials for integrated support supervision in Uganda that are being used nationally

Supported MOH to develop and process the *Uganda Immunization Policy*

Supported development of the *MOH Uganda EPI Newspaper Pull-Out*