Reaching Every District Using Quality Improvement (RED-QI) Methods

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A How-To Guide for Immunization Program Managers

JSI Research & Training Institute, Inc.

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ACRONYMS AND ABBREVIATIONS

AR	Accuracy Ratio
ARISE	African Routine Immunization System Essentials
BMGF	Bill & Melinda Gates Foundation
CAO	Chief Administrative Officer
CDC	U.S. Centers for Disease Control and Prevention
CHAI	Clinton Health Access Initiative
CVD	Center for Vaccine Development
DHIS2	District Health Information System Version 2
DHMT	District Health Management Team
DOR	RI Dropout Rate
EPI	Expanded Programme on Immunization
FMOH	Federal Ministry of Health
Gavi	The Vaccine Alliance
HC	Health Center
HEW	Health Extension Worker
HFs	Health Facilities
HMIS	Health Management Information System
HSD	Health Sub-district
HUMC	Health Unit Management Committee
HW	Health Worker
IIP	Immunization in Practice
JSI	John Snow, Inc.
KII	Key Informant Interview
LC	Local council 1
MCH	Maternal and Child Health
MCHIP	Maternal and Child Health Integrated Program
MCSP	Maternal and Child Survival Program
MMs	Monthly Meetings
MNCH	Maternal, Newborn, and Child Health
MOH	Ministry of Health
M&E	Monitoring and Evaluation
NHS	Non-health Stakeholder
OJT	On-the-Job Training
PCV	Pneumococcal Conjugate Vaccine
PDSA	Plan-Do-Study-Act Cycles
PHC	Primary Health Care
QI	Quality Improvement
QIT	Quality Improvement Team
QRMs	Quarterly Review Meetings
QWIT	Quality Work Improvement Team
REC	Reaching Every Community/Child
REC-QI	Reaching Every Community/Child using Quality Improvement
RED	Reaching Every District
RED-QI	Reaching Every District using Quality Improvement
RI	Routine Immunization
SA	Situational Analysis
SS	Supportive Supervision
SS4RI	Stronger Systems for Routine Immunization
TOT	Training of Trainers
TWG	Technical Working Group
UI-FHS	Universal Immunization through Improving Family Health Services
UNEPI	Uganda National Expanded Program on Immunization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VHT	Village Health Team
VIMCB	Vaccine and Injection Material Control Book
WHO	World Health Organization

INTRODUCTION

Many countries adopted the Reaching Every District (RED) strategy for immunization, introduced by the World Health Organization (WHO) and partners in 2002.[1] It aims to improve immunization coverage and effectiveness, with a targeted focus on poorer-performing districts and health facilities (HFs). In addition, the strategy called attention to the importance of strengthening the routine immunization (RI) system.

Despite the implementation of the RED strategy for nearly two decades, many countries' Expanded Programme on Immunization (EPI) programs faced challenges, including regular stock outs of vaccines, non-functional cold chain, irregular supervision, very limited use of data for action, and less-than-optimal community involvement. Guidance on ***how*** to fully and sustainably implement the RED strategy was inadequate.

The Reaching Every District using Quality Improvement (RED-QI) approach arose as a response to these gaps. RED-QI combines both the full RED strategy and the use of quality improvement (QI) tools and practices. The purpose of RED-QI is to build the capacity of EPI stakeholders to explore obstacles to implementation of the RED strategy and to problem solve. It also focuses on methods to sustain the gains made in strengthening RI.

This guide brings together the experience and lessons learned from introducing RED-QI in Uganda and Ethiopia. In 2010, John Snow, Inc. (JSI), first explored applying tools from the field of quality improvement to the RED strategy in Uganda. Building on promising findings from that experience, JSI adapted this approach to align with the resources typically available in health systems in low-income countries. JSI worked with the governments of Ethiopia from 2011-2021 and Uganda from 2013-2019 to introduce this enhanced approach in a wide range of districts (103 in Ethiopia and 25 in Uganda).

There is a wealth of quantitative and qualitative data from Ethiopia and Uganda demonstrating the positive impact of implementing RED-QI. In Ethiopia, selected results include an increase in districts and health facilities with completed microplans, an increase in the number of health facilities with defaulter tracking mechanisms, and greater consistency of immunization data across all reporting tools. In addition, serology surveys conducted in the initial three project districts at baseline and after RED-QI program implementation showed that immunological protection from tetanus increased an average of 12%. [2] In Uganda, RED-QI implementation led to an increase in the number of routine immunization sessions both planned and conducted, and improved planning led to an increased number of communities reached with RI services.[3] In a 2020 assessment of lessons learned from RED-QI implementation and scale-up in Ethiopia and Uganda, key informant interview respondents overwhelmingly viewed the approach as being valuable, effective, inexpensive, compatible with existing systems, and sustainable.

The **aim of this document** is to provide guidance on how to carry out the RED-QI approach, including operational details and best practices about the approach's planning, implementation, and monitoring/evaluation. The **key audiences** for this document are immunization program staff at the national and sub-national levels who are interested in introducing RED-QI tools and practices to improve the quality of immunization program management. Staff of partner organizations and others with an interest in improving and strengthening RI systems may also find it useful. **While the RED-QI approach was specifically implemented with managers and health workers from immunization programs, the principles and practices described here can be applied across public health programs.**

JSI gratefully acknowledges the Bill & Melinda Gates Foundation, which provided financial and technical support for this activity.

HOW TO USE THIS GUIDANCE DOCUMENT

The guidance document provides an overview of the RED-QI approach and describes the approach's design and details about planning, orientation of EPI staff, implementation, and monitoring and evaluation. The key tools used in the approach are briefly described below; additional QI tools and practices are also attached as **annexes. These tools are intended to serve as flexible templates that can be adapted for use locally, depending on the needs and scope of the program.**

This guidance describes how the entire RED-QI approach can be implemented. However, routine immunization programs may choose to implement only selected tools and practices. If so, programs can modify the scope of activities described in this guide.

OVERVIEW OF THE RED-QI APPROACH

RED-QI aims to operationalize all five components of the RED strategy, which are:

- **Planning and management of resources, including microplanning**
- **Reaching all target populations**
- **Engaging with communities**
- **Conducting supportive supervision**
- **Monitoring for action and using data for action**

RED-QI is the whole RED strategy *plus* QI tools and practices that enable local solutions to strengthen RED implementation. RED-QI can enable managers, health workers (HWs), and communities to better plan, implement, and monitor RED. (See Annex 1 for an overview presentation of the RED-QI approach.)

RED-QI adds very few new activities to RED programming, and all activities can be built into existing RED work plans. **It is important to note that RED-QI does not replace the RED strategy but helps to operationalize it, providing practices and tools to achieve the goals of RED.**

Definition of QI

A definition of QI is:

"A cyclical process of measuring a performance gap; understanding the causes of the gap; planning and implementing interventions to close the gap; studying the effects of the interventions; and planning additional corrective actions as necessary."

RED-QI Essential Processes

Rather than setting up new structures or bringing in new cadres of staff, RED-QI focuses on processes that strengthen the RED practices already in place and helps to ensure that practices that are not yet in place are carried out. The stool (see Figure 1) provides a conceptual representation of the essential RED-QI processes, combining the RED components with QI. Table 1 below summarizes the RED-QI processes that correspond to the RED strategy components.

Figure 1. Conceptual Representation of RED-QI Processes

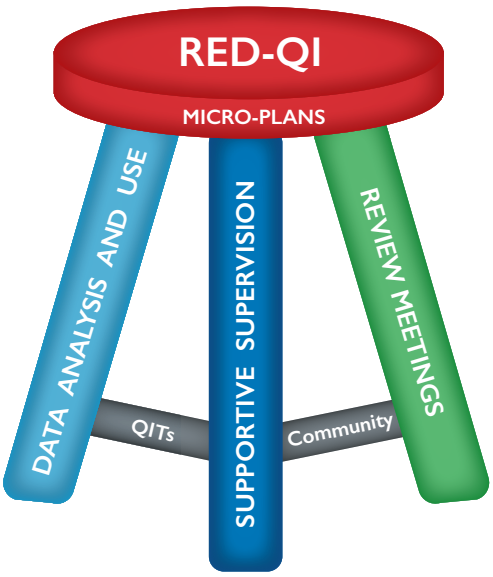


Table 1. RED Components and Corresponding RED-QI Processes

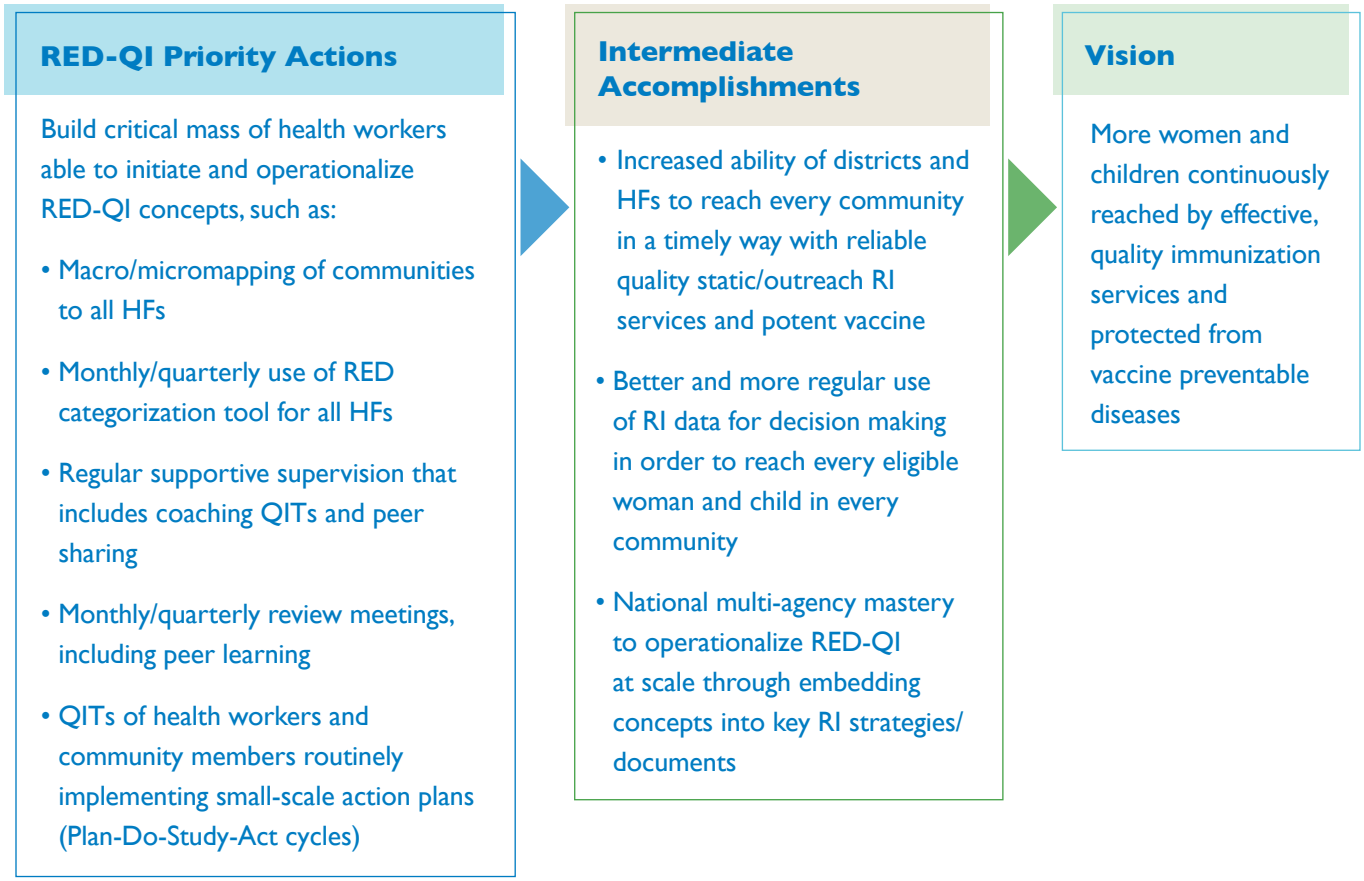
RED Component	RED-QI Processes that Strengthen RED and the RI System
Planning and management of resources (including microplanning)	• Develop health facility-level EPI microplans • Participatory community mapping to accurately identify catchment populations • Root cause analyses to identify the underlying causes of problems • Plan-Do-Study-Act (PDSA) cycles to test solutions developed by health workers and community members
Reaching all eligible populations	• Participatory community mapping • Use of Quality Improvement Teams (QITs) to obtain community input on optimal location and time for outreach/mobile sessions
Engaging with communities	• Use of QITs to conduct PDSA cycles and trace defaulters • Involving of civil administration to elevate issues, mobilize local resources
Conducting supportive supervision	• Engagement of health staff and non-health stakeholders in conducting supportive supervision • Increased focus on health worker capacity building and mentorship, particularly for data analysis and problem-solving
Monitoring and using data for action	• Data quality self-assessment and improvement in data consistency across EPI reporting tools • Building of health worker capacity to monitor immunization coverage and dropout rates to inform actions • Quarterly Review Meetings (QRMs) to review performance and problem solve, and mobilize local resources

(Note: some RED-QI processes, such as community mapping and non-stakeholder engagement, strengthen multiple RED components.)

Potential Benefits of RED-QI

Using the RED-QI approach's tools and practices (inputs) is envisioned to generate intermediate accomplishments (outputs) and long-term achievements (outcomes) as described in Figure 2 below.

Figure 2. RED-QI Pathway Towards Sustained High Immunization Coverage



See Annex 2 for a case study from Uganda that demonstrates immunization program performance changes due to RED-QI implementation.

Key QI Tools and Processes Used in RED-QI

Many options from the QI toolkit can be applied by RI programs, but not all processes need be applied in all contexts. Below are key tools and practices that JSI and partners found most useful and sustainable.

Quality Improvement Teams

The Quality Improvement Team (QIT) is a group of people who oversee and perform tasks to solve identified problems affecting a specific program. At its core, QI is a team process. A QIT draws on the knowledge, skills, and perspectives of individuals within the team to make improvements. QITs meet regularly to identify and analyze areas in need of improvement, suggest solutions, and test the new ideas.

In RED-QI, QITs are typically formed using existing structures and can include a mix of civil administrative staff, HF staff, and local committees, where possible. QITs are implemented at different levels: at the district and sub-district levels, teams focus on improving management processes and procedures, while at the community/HF level, teams focus on improving service delivery. Before QITs begin improvement efforts, they receive orientation to understand their roles and responsibilities and gain familiarity with the methods and tools involved in the QI process. (See Annex 3 for a sample training module on developing a QIT.)

Process Mapping

A process map (as shown in Table 2 below) examines how a task is accomplished. It involves comparing the *ideal* with the *actual* process, enabling the users to identify and address any gaps. By identifying inefficiencies, it serves to better align the actual to the ideal. Process maps help to identify problems and generate solutions by answering questions such as:

- Is the process standardized, or are the people doing the work in different ways?
- Are steps repeated or out of sequence?
- Are there steps that are unnecessary?
- Are there steps in which errors occur frequently?

Table 2. Example of Process Mapping—Packing Vaccines in the Vaccine Carrier

S/N	Activity Description		Identified Gaps
	Standard/Ideal	Actual Practice	
Preparations			
1	Pre-cooling of diluents (storing diluents with vaccines in the fridge)	No pre-cooling of diluents	Gap
2	Cleaning and drying the vaccine carrier and sponge	Cleaning and drying the vaccine carrier and sponge	
3	Conditioning ice packs	No conditioning/use solid frozen ice packs	Gap
Packing in the Carrier			
4	Placing ice packs into their chambers in the vaccine carrier	Placing ice packs into their chambers in the vaccine carrier	
5	Packing vaccines in polythene bags	Vaccines not packed in polythene bags (vaccine vials dropped directly into vaccine carrier)	Gap
6	Place vaccines in the vaccine carrier according to their heat/cold sensitivity	Place vaccines in the vaccine carrier according to their heat/cold sensitivity	
7	Insert a thermometer into the vaccine carrier	No thermometer	Gap
8	Place the dry sponge over the packed vaccine	Place the dry sponge over the packed vaccine	
9	Close the vaccine carrier tightly	Close the vaccine carrier tightly	

(See Annex 4 for an example of process mapping of a health facility-level problem.)

Root Cause Analysis

The concept of analyzing underlying causes within a whole system is central to QI. Problem analysis is also an important part of RED microplanning, and root cause analysis during microplanning is one of the innovations of RED-QI.

Root cause analysis is an efficient and effective way of understanding a problem. For example, in RED- QI, the RI dropout rate (DOR) is seen as a symptom, needing local context analysis of root contributors to this concern.

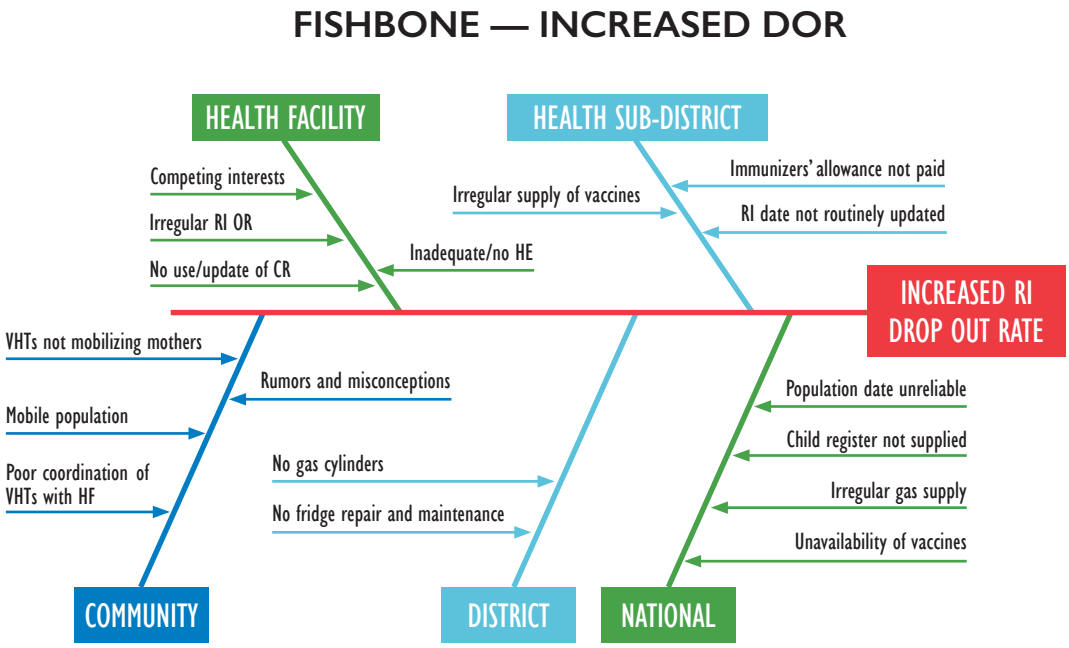
The fishbone or cause and effect diagram (shown in Figure 3 below) helps a team generate possible causes of a problem, classify them, and examine the underlying causes of the problems. The fishbone diagram below analyzes the causes of the problem "increased DOR" within five main levels of the health system and examines where the root causes in each main area could be. It helps answer the question, "What are the causes of dropouts at the national, district, HF, and/or community level?"

Root cause analysis should focus on the root causes at the local level that can be addressed within the means of that level. Issues that need to be addressed at a higher level should be reported to that level.

Criteria for prioritizing the root cause to address first include:

- Ability to solve the problem through available resources (with minimal or no external support)
- Urgency of the root cause: the planning team considers it the most pressing
- Capacity of the intervention to have the most impact on the aim

Figure 3: Example of Root Cause Analysis Using the Fishbone Tool



Abbreviations:

CR = child register
OR = outreach
HE = health education
HF = health facility
RI = routine immunization
RI OR = routine immunization outreach
VHTs = village health teams

(See Annex 4 for additional details about the fishbone analysis tool.)

Peer Learning

Gaining knowledge and skills through active support among people who have similar responsibilities is called peer learning. It involves helping each other to learn and, in doing so, learning themselves. In RED-QI, peer learning takes place through integrated quarterly review meetings (QRMs), QIT meetings, exchange visits, and other activities.

Additional QI Tools and Processes

Please see Annex 4 for details about the Plan-Do-Study-Act (PDSA) cycle and Annex 5 for a description of the RED-QI Model for Improvement.

PLANNING FOR RED-QI INTRODUCTION

Key considerations for introducing RED-QI:

- Would the EPI system be strengthened if district managers and health workers were more effective at local problem-solving? If yes, consider how the RED-QI approach or individual RED-QI tools and practices could help to address these issues.
- Determine the scope for RED-QI introduction in your country. Are you planning to introduce the approach in specific districts/regions or nationally? The entire RED-QI approach or selected tools and practices?

The purpose of RED-QI is to make the RED strategy fully operational; this is done through a focus on all five RED components to ensure that each component is solidly in place. Existing RED tools do not offer guidance on how to prioritize and make decisions for the RI program. Tools such as the fishbone analysis and process mapping, essential components of RED-QI, can help a team do these critical steps. At its core, RED-QI seeks to enable managers, HWs, and communities to better plan, implement, and assess RED.

Planning orientation and training of EPI staff to support approach

As indicated above, this guide assumes that roles and responsibilities for implementation of the RED-QI approach will be integrated into the job descriptions of staff at each level of the health system (from national level down to health facility service providers). Prior to implementation, staff at the national level will need orientation and training about the approach to be able to provide on going support at the sub-national level for the approach and the building of a more robust routine immunization system.

Key considerations for orientation and training of staff:

- What does your country's health worker education/training program look like? Are there opportunities to integrate RED-QI training into existing training opportunities? What resources do you have available to train health workers at each level of the system? Will you be able to train all of your staff or only a portion of them?
- Are you planning to roll out the entire approach or implement only selected tools or practices?
- Consider how RED-QI tools and activities will be integrated and reinforced through the current routine immunization system.
- How do you create a supportive working environment for RED-QI? Do EPI staff at each level of the health system have the autonomy and support to review their own data and problem solve to address local problems, and the ability to act to implement changes to affect identified problems? If not, what can you do to help enable that environment?

Answering these questions will help guide your planning for orientation and training needs for staff in your health system.

As part of staff orientation and training, we recommend the following activities for **national staff**:

1. Orientation to the RED-QI approach (three-phase implementation strategy: RED-QI activities, tools, and methodologies)
2. Training of trainers (TOT) for the RED-QI training package: 1) RED-QI/PDSA skills building, 2) microplanning, and 3) supportive supervision
3. As needed, skills building in the following areas: use of data for decision making and review of RED Categorization Tool; bottom-up microplanning; capacity building for staff including on-the-job training and supportive supervision; and community engagement and mobilization. (See Annex 6 for an example of the RED Categorization Tool.)

What is the role of a National- or Regional-level supervisor?

Although the focus for RED-QI implementation is at the district and sub-district level, national and regional supervisors play a critical role in ensuring successful rollout of the approach. See Annex 7 for recommendations on how national or regional supervisors can support district and sub-district teams through each phase of the approach.

Orientation and training activities for **sub-national** staff are described in the Implementation section below.

IMPLEMENTATION OF THE RED-QI APPROACH

Key considerations for implementation of the RED-QI approach:

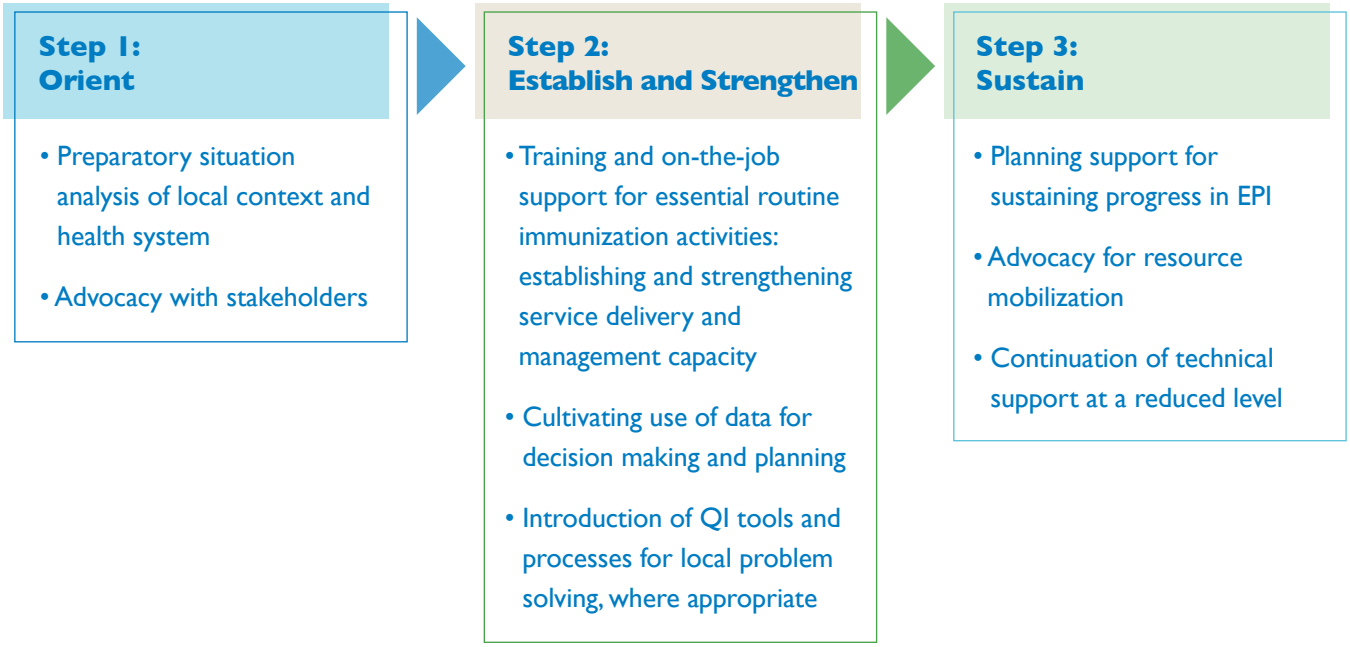
- Depending on your context and needs, you may choose to implement all, or only some, of the activities listed below to improve the design and implementation of your routine immunization system. The scope of the introduction will determine how many of these activities you would use.

In this section, we describe the suggested timeframe and activities for implementation of a full RED-QI package.

Implementation of the RED-QI approach is divided into three phases (see Figure 4 below):

1. Getting started with RED-QI
2. Establishing RED-QI and system strengthening
3. Maintaining and sustaining improvements in RED-QI

Figure 4: Phases of Implementation of the RED-QI Approach



The purpose of the phases is to ensure that district EPI managers and health workers understand, appreciate, and can adapt the RED-QI tools and practices into their RI systems.

When planning for RED-QI implementation, it is important to think about the contexts in which you will be introducing RED-QI; this may mean you will need to allow for flexibility in the activities you choose to implement. For example, there is specific guidance on how to adapt training content for areas that have no prior experience with RED and have not done

microplanning before. Or, if you will be implementing in areas of highly inequitable coverage with populations that require outreach/mobile strategies, you may need to focus more on these activities or increase the frequency and reach of where you provide technical assistance for outreach/mobile planning and follow-up.

Below is a high-level overview of standard RED-QI activities at the sub-national level by phase. **You may adapt the activities and their duration based on local needs and resources, and whether you are implementing the entire RED-QI approach or selected RED-QI tools and practices.**

PHASE 1: GETTING STARTED (~2-3 MONTHS)

The purpose of this phase is to assess the district's RI system and capacity, gain staff buy-in, and begin to introduce RED-QI.

RED-QI Activity	Who is Responsible	Estimated Duration	Links/Tools
District Health Team orientation	National/ regional	1 day	
Situational analysis (SA)	District	2 weeks (1 week field, 1 week data review)	See Annex 8 and Annex 9
Presentation of SA findings, RED Categorization Tool activation, and facilitation of RED-QI training	District	4 days	

- **District Health Team orientation:** This activity should brief district leadership, including district administration staff, to introduce RED-QI implementation and outline district team roles and responsibilities.
- **Situational analysis (SA):** This activity serves as a baseline data-gathering activity to help prioritize issues and target needed implementation activities. This can be completed with a combination of readily available data and field visits to selected health facilities. (See Annex 8 for an example of a district-level situational analysis tool and Annex 9 for an example of a health facility situational analysis tool.)

- **Presentation of SA findings, RED Categorization Tool activation, and facilitation of RED-QI training:** These three activities help kick off major activities; they can be completed at the same time:
  - Presentation of SA findings to district-level staff: Present and discuss the SA findings, including discussion on short- and longer-term solutions for identified gaps.
  - RED Categorization Tool activation: During this activity, district participants receive and begin to fill out the Excel-based RED Categorization Tool for future monthly use. The tool, developed by the World Health Organization (WHO), allows managers to analyze EPI performance based on access and utilization rates by individual HFs and the district as a whole. (See Annex 6 for an example of the RED Categorization Tool.)
  - RED-QI Training (three days): This training provides refresher training on the five RED components and describes how QI tools and methods can enhance implementation of RED. During this training, Quality Improvement Teams (QITs) should be organized and start to meet regularly to identify and problem solve.

Key message: As RED-QI tools and activities are introduced, emphasize that they are not intended to replace the current system. They are meant to help improve the effectiveness of the current system and to improve the way managers and health workers, at all levels of the health system, do their jobs. The approach builds and reinforces skills in immunization planning, implementation, and monitoring, with the overall goal of improving the quality and reach of services.

Orientation for RED-QI in settings with a large number of health workers: Example from Ethiopia

In Ethiopia, RED-QI was implemented in 103 districts and more than 2,700 health facilities. Implementing at this scale meant orientation, training, and ongoing support for thousands of health workers at district and facility levels. Training all health workers, particularly at the facility level, was impossible; the approach focused on building skills of immunization managers (EPI focal persons) who could, in-turn, support their teams to implement the approach. In the absence of formal training, the team used a series of job aids to introduce and support RED-QI activities, and utilized supportive supervision, review meetings, and peer learning to build capacity and reinforce concepts.

PHASE 2: ESTABLISHMENT AND STRENGTHENING (~12-20 MONTHS)

During this phase, the majority of key activities are carried out, and ongoing support to implement RED-QI is provided to health workers through a combination of trainings, mentoring/supervision, on-site technical assistance, and data-focused review meetings.

RED-QI Activity	Who is Responsible	Estimated Duration	Links/Tools
Supportive supervision training	Master trainers	4 days	
EPI-specific supportive supervision (multiple times)	District	1 week	
Microplanning training	Master trainers	4 days	
Optional: Planning support for outreach/mobile sessions	District	3 days	
Optional: Follow-up visit for outreach/mobile (one or two times)	District	3-4 days	
Optional: Microplanning implementation follow-up	District	2 days	
Quarterly Review Meetings or Monthly Meetings (MMs) (multiple times)	District	3 days	
Optional: Leadership, management, and accountability (LMA) training	Master trainers		Annex 10 (LMA training agenda)
Optional: Peer exchange visit between facilities within one district	District	1 day	

- **Facilitate supportive supervision training:** This training provides instruction on coaching and mentoring techniques and technical knowledge needed to provide supportive supervision for immunization. The last two days of this training should have a smaller group of participants (supervisors only), and on the last day, a practical field exercise should be conducted to practice coaching/mentoring skills.

- **EPI-specific supportive supervision (multiple times):** This activity provides mentoring and on-the-job support to health workers at select HFs; supervisors should use a supervision checklist as a starting point to work collaboratively with health workers to problem solve around the management and delivery of RI services. Prior to each visit, district staff should use data (e.g., from the RED Categorization Tool) to prioritize which HFs should be visited, and prior checklists from the HFs should be brought along to assess progress since the previous visit. Recommended frequency is every other month, or at least quarterly. Supervisors can provide mentorship and support for QI processes during supportive supervision visits.

- **Microplanning training:** This training provides refresher instruction on all aspects of developing a microplan. The agenda should include multiple working sessions to allow all HFs to complete/update all forms of the microplan. Community leaders should also be involved in this activity to provide guidance around catchment populations and their needs, contribute to immunization session planning (particularly for outreach/mobile sessions), and determine in-kind resources they could contribute towards enhancing RI services. Select QI tools, such as the fishbone analysis tool, can be incorporated in the microplanning process.

Best practice for sequencing of trainings

The standard trainings and sequencing are: RED-QI for the first training, supportive supervision second, and microplanning as the last training. This is recommended for areas that already have established microplans and have basic knowledge of the RED strategy prior to implementation.

Based on experience implementing RED-QI in Ethiopia in places where the immunization system was particularly weak (e.g., no microplans, limited health worker capacity or knowledge of RED), the content and sequencing of training should be adjusted to put into place the building blocks of a functional RI system first, and subsequently incorporate QI tools to improve quality. Therefore, it is recommended to first have a RED/microplanning training (to develop a microplan for the district/HFs and introduce participants to the RED approach), then conduct the supportive supervision training, and lastly provide a training on QI that focuses on how QI tools and methods can enhance implementation of RED.

The standard training content can simply be rearranged when adapting training for areas without prior experience with RED or microplanning. Districts that need to focus first on building the RI system should delay initiation of the Quality Improvement Team until the RED-QI training. It is encouraged to align any microplanning trainings with regular microplanning processes/timelines that may exist in country, and supportive supervision training should be provided prior to initiating EPI-specific supportive supervision.

- **Optional depending on the context—planning support for outreach/mobile sessions:** HFs may not know how to efficiently set up or organize mobile (or outreach) visits independently; providing technical assistance to HFs with many planned outreach/mobile visits can be helpful to get services started and running efficiently. During this activity to differentiate from outreach/mobile visits, district staff support selected HFs to plan for outreach/mobile sessions, including reviewing the roles of each team member, supply requirements, social mobilization, and data-recording practices. Community leaders should also be involved in this planning activity.

- **Optional depending on the context—follow-up visit for outreach/mobile (1-2 times):** The purpose of this activity is to check in with HFs that have been implementing outreach/mobile sessions to: 1) understand if the current plan aligns with community needs, 2) troubleshoot issues or concerns from vaccination teams or assess the feasibility of integrating additional services, and 3) review data recording and reporting from completed outreach/mobile sessions and provide support as needed.
- **Optional add-on activity—microplanning implementation follow-up:** If microplanning was not commonly done at the service delivery level prior to RED-QI implementation, or if microplanning was not completed by all HFs during the initial microplanning training, it is recommended to conduct a follow-up visit for microplanning implementation, to be done in the month after microplanning development. The purpose of this activity is to review/ensure all HFs and the district have completed and finalized their microplanning—including allocation of resources for immunization sessions, finalized session plans, and communication to the community—and that all HFs have a copy of the final microplan. This activity can be added on to either the outreach/mobile planning visit or the outreach/mobile follow-up visit, depending on alignment with the microplan.
- **Quarterly Review Meetings (QRMs) or Monthly Meetings (MMs) (multiple times):** Depending on your context and needs, you may want to organize either QRMs, MMs, or both:
  - **QRMs** bring together staff from all levels in the district and are opportunities to review data, promote peer learning and idea exchange across HFs, and develop action plans based on data and discussion of problems. Because they bring together large groups, require more planning and resources, and take health workers away from their workplace, it is suggested to conduct these on a quarterly basis.
  - **MMs** are smaller meetings that may be done at district level (participants are district office staff) or facility level (every HF holds its own meeting with relevant staff). They provide an opportunity to review monthly data and do localized problem solving. Because they provide the ability to dive deeper within a small group context, requiring little/no extra resources, it is suggested to conduct these monthly. HFs may already have existing monthly meetings; if so, the agenda could be adjusted to incorporate EPI data review and localized problem solving.
- **Optional activity—leadership, management, and accountability (LMA) training:** This trains health facility managers in foundational abilities, such as planning and objectives setting, delegation, organizing services, staffing, budgeting, communication, and motivation to increase leadership, management, and accountability skills. (See Annex 10 for sample LMA training agenda.)

- **Optional activity—peer exchange visit between facilities within one district:** Peer-to-peer learning is an opportunity for peers to discuss similar challenges and collectively problem solve. Peer exchanges can be done between neighboring HFs within a district, or a model HF can be paired with an HF where staff are struggling or are new. Peer learning can help to mitigate the effects of staff turnover, as peers can share knowledge and skills while new HWs await training or opportunities for skills building.

What can RED-QI adaptation look like?

For some health workers in Ethiopia, implementation of all four steps of the PDSA cycle were challenging to continue over time. The health workers continued to meet with their QITs on a regular basis and to identify problems within the health system. The QITs would propose and implement solutions to identified problems but did not commonly implement the "study" step of the PDSA cycle. Instead, teams typically agreed to either continue to implement the proposed solution if it seemed to be working or drop it altogether and try something new. The teams continued to utilize the skills they had built by identifying and addressing problems but adapted the approach for what seemed manageable and feasible to them.

PHASE 3: MAINTAINING AND SUSTAINING (UP TO ONE YEAR)

Although discussion with district and HF staff on maintaining progress and sustaining activities should be held at each phase of the approach, it is in the final phase when the focus is on helping districts review progress to date and plan for continuation of the approach.

RED-QI Activity	Who is Responsible	Estimated Duration	Links/Tools
Immunization Review and Planning forum (IRP)	District	2 days	Annex 11 for mid-program review agenda
Continuation of routine activities (e.g., updating microplans, providing static/outreach/mobile services, conducting supportive supervision, holding QRMs)	District and health facility	Varies	

- Immunization Review and Planning forum (IRP): This activity is an opportunity to review progress thus far in RED-QI implementation and immunization performance and to collaboratively discuss maintaining gains made in the delivery and management of RI services. This activity can align with annual planning processes for EPI to ensure there is continued commitment to, planning for, and resourcing of critical activities.
- Continue routine activities: During Phase 3, routine activities—such as updating microplans, providing immunization services at static/outreach/mobile sites, conducting supportive supervision, and holding QRMs or monthly meetings—should continue.

Best practice: Fostering the right environment for local problem solving

RED-QI is a strategy focused on building capacity of managers, health workers, and communities to identify and solve local problems. The strategy encourages engagement from a variety of stakeholders in the planning, implementation, and monitoring of the RI program. Health workers are actively encouraged to solve their own problems and to alert supervisors of problems that cannot be addressed at the HF level. This requires a working environment in which health workers are encouraged and supported to act and have the confidence to engage with their supervisor on problems. In some contexts, health workers may not have, or may not feel they have, the autonomy to make decisions, much less point out problems that need to be addressed up the chain. It is therefore important to acknowledge these challenges, if present within your context, and to take steps to address them. Health workers are the drivers of this work. For RED-QI to work, health workers must be empowered and supported to make decisions and to act.

Best practice for Phase 3

It is important to note that Phase 3 does not indicate an "end" to RED-QI. Phase 3 merely signifies the reduction of specialized technical assistance/support for the introduction of RED-QI to a district. However, RED-QI should be considered the ongoing strategy for the management and delivery of quality RI services at district and health facility levels. **Think of RED-QI as an improved way of working rather than a project with an end date.**

Plan for ongoing capacity building and follow-up support for RED-QI tools and practices for both health workers and managers. Doing so will 1) help train new staff on RED-QI (essential when there is regular turnover of staff), 2) help establish use of the practices and tools as part of the culture of the EPI system, and 3) help sustain their use long term.

Sustainability of RED-QI through integration into the health system

An important aspect of RED-QI sustainability is ensuring that the approach is integrated into the existing routine immunization system. Below are examples of how this can be done:

- Incorporate RED-QI tools and practices into current training curricula for nurses and health workers (e.g., health worker training program).
- Add RED-QI tools and methods to standard immunization trainings (e.g., Immunization in Practice training).
- Include RED-QI tools and practices in national-level guidelines and guidance documents. For example:
  - o Supervision checklists include process indicators, such as the existence and functionality of a QIT.
  - o Microplanning templates include QI tools such as root cause analysis and action planning.
  - o Quarterly review meetings include data on RI process indicators .
- Establish and support QITs at each level of the health system.
- Develop and distribute job aids to support RED-QI introduction (e.g., fishbone analysis job aid or job aids to support data consistency and quality).

Cost Categories

You will need resources to successfully implement the RED-QI approach. Although most of these costs should already be assumed within your immunization budget, there are areas of added cost that should be considered, a few examples of which are highlighted below. **Note:** In order to sustain RED-QI inputs, we recommend planning and budgeting for all RED-QI activities within the district's mandate and capacity.

As costs will vary by country and context, we've included here some cost categories to consider as you implement the approach:

Human resources: It is recommended that EPI focal persons at all levels of the health system have time devoted to planning, implementation, and monitoring of the approach. This will include time for initial training for the approach, time and resources for supportive supervision and coaching of the approach, and time to monitor outcomes and implement program improvements based on data.

Resources for tool development/adaptation and printing: Resources may be needed to adapt tools (such as the EPI microplan or supportive supervision checklist) to include QI methods. These adapted tools then would need to be printed and distributed.

Resources for training: The RED-QI approach endorses a three-part training package to build health worker capacity. Ideally, all immunization managers at national, regional, district, and sub-district levels would receive all three trainings in a span of several months. Resources for each of these trainings should be budgeted (e.g., per diem costs, meeting hall rental, lunch and snacks, stationary, and printing of materials/tools). In addition, for workers at the service delivery level, it is recommended that the trainings be scaled and included as part of health worker curriculum; however, it is up to each country to determine the breadth and scope of the training scale-up. Depending on the country context, distance or blended learning approaches may be a cost-effective approach for training.

Resources for community and non-health stakeholder (NHS) engagement with the health system: A critical component of the RED-QI approach is community and non-health stakeholder engagement. These stakeholders should be included in the following activities: planning for RED-QI implementation, routinely reviewing of immunization program performance, microplanning, serving as members of QITs, and supporting immunization service delivery (e.g., outreach/mobile services, defaulter tracking, and social mobilization). Resources such as per diem or facilitation costs may be needed to support community or NHS engagement in these activities.

Resources for supportive supervision and review meetings: Although assumed to be part of the routine immunization program, these activities are not always resourced and as such do not get implemented as often as needed (ideally at least four times each year).

Additional costs for consideration

Depending on the context, additional resources may be needed to support outreach or mobile service delivery as part of routine service delivery. These costs can be extensive (e.g., vehicle rental and gas, per diem and lodging, cold chain equipment).

Lastly, RED-QI encourages peer-to-peer learning through exchange visits, either within or between districts. Peer learning is new to RED implementation but can be an incredibly useful tool to support capacity development and provides the opportunity to share local solutions to similar challenges in an area.

Example Timing of RED-QI Activities

Below are two example timetables of RED-QI activity implementation. Figure 5 shows an example timeline for RED-QI implementation for districts with microplans and RED knowledge prior to RED-QI implementation. This example includes optional activities and assumes RED-QI support is starting shortly after annual microplanning. Monthly meetings at HF level are excluded from the table.

Figure 5: Example timeline for RED-QI implementation support (districts with pre-existing microplans)

RED-QI Activity	Month																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
District Health Team orientation	■																							
Situational analysis (SA)		■																						
Presentation of SA findings, RED Categorization Tool activation, and facilitation RED-QI training			■																					
Supportive supervision training				■																				
EPI-specific supportive supervision					■			■			■			■			■			■			■	
Microplanning training											■													
Planning support for outreach/ mobile							■																	
Follow up visit for outreach/ mobile												■												
Microplan implementation follow-up (optional)												■												
Leadership, management, and accountability (LMA) training (optional)													■											
Quarterly Review Meetings (QRMs)						■				■				■				■				■		
Immunization Review and Planning forum (IRP)																								■

Figure 6 shows an example timeline for RED-QI implementation for districts without microplans and/or districts with highly inequitable coverage and majority of population only accessible through outreach/mobile strategies. This example includes optional activities and adjusted training sequencing as per guidance. Monthly meetings at HF level are excluded from the table.

Figure 6: Example timeline for adapted RED-QI implementation support (districts with no microplans, high inequity, or majority population reached through outreach/mobile)

RED-QI Activity	Month																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
District Health Team orientation	■																							
Situational analysis (SA)		■																						
Presentation of SA findings, RED Categorization Tool activation, and facilitation RED-QI training			■																					
Supportive supervision training				■																				
EPI-specific supportive supervision					■			■			■			■			■			■	■		■	
Microplanning training											■													
Planning support for outreach/ mobile				■																				
Follow up visit for outreach/ mobile							■																	
Microplan implementation follow-up (optional)				■								■												
Leadership, management, and accountability (LMA) training (optional)													■											
Quarterly Review Meetings (QRMs)						■				■				■				■				■		
Immunization Review and Planning forum (IRP)																								■

MONITORING AND EVALUATION

Key considerations for monitoring and evaluating RED-QI implementation:

- Are you piloting the approach in a small number of districts to understand the feasibility of implementing it and determine its impact? Or are you rolling it out on a larger scale?
- What human resources do you have available who can assist with planning, implementing, and analyzing monitoring and evaluation (M&E) activities?

Importance of Monitoring and Evaluation (M&E)

M&E is critical to generating evidence around public health program effectiveness. A strong M&E system will capture data on different aspects of a program to understand whether the program is achieving its impact in the short, medium, and long term. It enables program management, reporting, and accountability. The evidence generated through M&E is useful to policymakers and program implementers who seek to understand if the program made a difference and achieved its stated impact goals. M&E supports advocacy because the evidence generated can be used to inform decisions around whether the program can be scaled or adapted in other settings.

Essential Definitions

Monitoring of a program or intervention involves the collection of routine data at regular intervals to assess progress towards achieving program objectives. It is used to track changes in program performance over time. Its purpose is to enable stakeholders to make informed decisions regarding the effectiveness of programs and the efficient use of resources. In the context of RED-QI, monitoring helps to track the implementation of RED-QI activities and their effectiveness in helping to strengthen the processes within an EPI program's processes. Monitoring data is collected at regular intervals, such as every quarter or every six months, and is reviewed frequently by a team of stakeholders who can make decisions around which aspects of the program need to be modified.

Evaluation measures how well the program activities have met expected objectives and/or the extent to which changes in outcomes can be attributed to the program or intervention. The difference in the outcome of interest between having or not having the program or intervention is known as its "impact," and measuring that is commonly referred to as "impact evaluation." In the context of RED-QI, evaluation can help assess whether use of the RED-QI approach is strengthening the EPI system overall as well as identify the factors that are critical in driving the observed change.

Best practice: Conduct a situational analysis

Before implementing the RED-QI approach, consider working with district health offices to conduct a situational analysis (SA) to gather information on the functioning of the health system and immunization program prior to implementing the approach. The SA serves as a baseline and is conducted before the RED-QI approach is implemented at the sub-national level. It assesses the status of routine immunization service provision at different levels of the health system (for example, district health offices and health facilities). The SA takes place shortly after the decision to pursue RED-QI and is conducted once, at the start of the program. SAs can also be part of formative assessments when the exact focus of improvement is unclear and more research is needed. (See Annex 8 and Annex 9 for examples of district-level and health facility-level SA tools.)

M&E for RED-QI

RED-QI is a data-driven approach, and data collection, review, and use is a core part of RED-QI. Immunization performance has traditionally been informed by outcome indicators of coverage and dropout rates, but these outcome measures are influenced by the intermediate outcomes that measure the strength of a routine immunization system. RED-QI provides a powerful dual focus on "performance" and "process" improvements. Monitoring and evaluation under the RED-QI approach should go beyond measuring system outcomes and dig deeper to understand how the components of the approach are functioning and how they then affect the strength of the RI system.

In one district in Ethiopia, an SA revealed that 33 percent of refrigerators in the district were non-functional and that only 10 of 18 health facilities were currently providing static EPI services. The EPI team responded to this data by focusing on maintenance of refrigerators and strengthening the provision of static EPI services.

Indicators

A clear set of indicators and targets are important to tracking progress along the process-to-outcome continuum. An indicator is a variable that measures one aspect of a program or project. The purpose of indicators typically is to show that program activities are carried out as planned or that a program activity has caused a change or difference in something else. **The following indicators for RED-QI M&E are suggestions based on current thinking and should be adopted, adapted, or revised as the situation dictates.**

Key indicators for EPI program to track:

Process indicators: Process indicators measure whether program activities are being implemented as planned. In addition, they also help us examine the results of the activities (i.e., outputs).

Indicator formats: They can be quantitative, like numbers or percentages, or they can be qualitative.

Data sources for process indicators: Most process indicators are not in the health management information system (HMIS) and may need to be collected from supportive supervision checklists and microplans. One option is to conduct periodic data collection exercises.

Frequency of data collection: Ideally this data should be collected once every quarter in order to identify areas of improvement and help develop strategies that strengthen the use of RED-QI methods.

How to use the findings: The data collection can be followed by a quarterly review of the data to identify which aspects of RED-QI are working well and which areas need improvement. As part of the data review meeting, meeting participants might also review the program plans and update the planning tool to reflect changes in the program objectives or pathways.

Illustrative process indicator list

PLANNING

- Percentage of HFs in the district that have determined their catchment areas and populations for RI services
- Percentage of HFs in the district that have RED microplans for RI
- Percentage of HFs in the district that are displaying up-to-date and accurate RI monitoring charts at their premises

MICROPLAN USAGE

- The extent to which microplans are being used to track sessions conducted
- The extent to which microplans are being used to track whether priority populations are being reached.

QIT ENGAGEMENT

- Percentage of HFs in the district that have established QITs
- Percentage of scheduled HF QIT meetings in each of the districts that were held in the last quarter

COMMUNITY ENGAGEMENT

- Number of QITs that include community members
- Percentage of HFs in the districts that had community members or leaders participating in the micro-mapping activities for RI

DATA USE FOR DECISION MAKING

- Percentage of review meetings held in the district that were attended by non-traditional stakeholders
- Percentage of HFs in the district that have up-to-date monitoring charts

SUPPORTIVE SUPERVISION

- Percentage of HFs in the district that have received at least one RI-focused supportive supervision session in the last quarter

DATA QUALITY

- Percent of HFs with accurate data, determined by comparing the number of Penta 1, Penta 3, and Measles (MCVI) doses in EPI register or tickler file, monitoring chart, and monthly reports to assess consistency across the three tools (see more details in Annex 12)
- Percent agreement between reports at various levels of the health system on the number of Penta 1, Penta 3, and Measles (MCVI) doses (for more details, see Annex 13)

Outcome indicators: These indicators measure whether a program has achieved its longer-term goals. They are calculated on longer time scales and are usually compared at baseline and endline.

Indicator formats: They can be quantitative–like numbers or percentages–or qualitative, but are usually quantitative.

Data sources for outcome indicators: If HMIS data quality is a challenge, then periodic lot quality assurance sampling (LQAS) coverage surveys could also be an option.

Frequency of data collection: Outcome indicators can be measured once a year or at baseline and endline. The frequency depends on the indicators being measured. For example, change in population level coverage is usually difficult to see in one year.

How to use the findings: The data collection can be followed up by a review of the findings to identify whether RED-QI has made a difference in the overall functioning of the EPI system. As part of the findings review meeting, meeting participants might also consider reasons that explain the findings, like policy changes or unanticipated events. By close of the meetings, the participants could draft a set of recommendations for improvement and scale-up elsewhere.

Illustrative outcome indicator list

1. Penta 1 coverage
2. Penta 3 coverage
3. MCV1 coverage
4. Dropout rates among and within antigens (the vaccines will be determined by the region)
5. Number of unimmunized children for Penta 1
6. Number of unimmunized children for Penta 3 and MCV1 (additional vaccines may be considered by the region)
7. Consistency of doses and coverage for vaccines that are supposed to be administered at the same time per the EPI schedule. This indicator allows us to see whether health workers are missing an opportunity to vaccinate for all vaccines for which the child is eligible. For example, children may receive their Penta 1 dose but not their PCV 1 dose.

Essential M&E tools for RED-QI

RED-QI is a data-driven method and data collection, review, and use is a core part of the RED-QI approach. As such, the RED-QI approach utilizes multiple M&E tools for program planning, monitoring, and improvement. See Table 3 below for an illustrative list of M&E tools.

TABLE 3: Illustrative list of M&E tools

PLANNING PHASE		
Tools	**Purpose(s)**	**References**
Situational analysis	To collect benchmark information about the RI service delivery system of a district To categorize health facilities and districts using at least 2 years of their previous RI implementation data To determine major strengths, influential factors, and gaps/challenges in implementing RI services in all levels	District-level SA tool: Annex 8 Health Facility SA tool: Annex 9
MONITORING PHASE		
Tools	**Purpose(s)**	**References**
EPI-Specific Supportive Supervision Checklist	To increase staff and QIT competencies in RI and learning approaches to improving RI.	
ASSESSMENT/EVALUATION PHASE		
Tools	**Purpose(s)**	**References**
RED categorization database analysis	To examine trends in outcome indicators	Annex 14
Coverage surveys	To examine trends in outcome indicators	WHO EPI Coverage Survey—Mid-Level Manager Training Module 7

Key activities in planning and implementing M&E for RED-QI

For all M&E activities, please consider the following essential steps:

1. Identify the aim of the activity.
2. Identify the key stakeholders who should be involved.
3. Describe the questions you want to answer.
4. Establish how the data will be used.

Once the above have been completed, the general steps in any M&E plan involve:

1. Preparing data collection tools or adapting existing tools
2. Creating data collection teams
3. Testing data collection tools
4. Collecting data
5. Preparing a data analysis plan
6. Conducting data analysis
7. Reviewing the data analyzed
8. Writing a report, including recommendations
9. Disseminating the report to all stakeholders who were identified in Part I above

GLOSSARY

Data Quality Self-Assessment Improvement (DQSI): A process to continuously measure and facilitate improvement of data accuracy and consistency at all levels. DQSI is used during internal (at the health facility) and external supportive supervision.

Fishbone Diagram (Root Cause Analysis Tool): A graphic tool used in QI that helps generate possible causes of a problem, classify them, and drill down to analyze the root causes of the problem.

Five Whys: A QI technique to explore the root cause of a particular problem: it asks a series (typically five) of "why" questions, based on the answers to the previous why question.

Flow Diagram (Process Map): A graphic tool used in QI that provides a picture of a process or procedure in order to clearly define a process, standardize procedures, design a new process or modify an existing process, and/or point out aspects of a process that are unclear.

Macro-mapping: A continuous process of identifying and assigning communities to health facilities for quality health service delivery to define facility catchment areas and populations for microplanning.

Micro-mapping: A continuous process of identifying and assigning communities with a facility catchment area to RI service delivery points (static, outreach/mobile, if applicable).

Model for Improvement: A framework to guide QI. The model includes three fundamental questions (the aim, the outcome measures, and the possible solution to a problem -- a change idea) and cyclical PDSAs.

Pareto Chart: A bar graph used in QI that breaks down a problem into categories to identify the vital few categories that contribute the most to a problem.

Plan-Do-Study-Act (PDSA) Cycle: A QI problem-solving model used for carrying out changes or making improvements. P=plan the change; D=do the change; S=study the change; A=act to maintain the change or to continue to improve.

Process Map: A QI tool to critically examine how a task is accomplished. It involves comparing the ideal with the actual process, enabling the users to identify and address the gaps. By identifying inefficiencies, it serves to align the actual with the ideal.

Quality Improvement (QI): A cyclical process of measuring a performance gap; understanding the causes of the gap; testing, planning, and implementing interventions to close the gap; studying the effects of the interventions; and planning additional corrective actions in response.

Quality Improvement Team (QIT): The group of individuals that meets regularly to identify and analyze areas in need of improvement, propose solutions, and test change ideas. The QIT oversees and performs carefully selected tasks to solve identified problems affecting the specific program.

RED Categorization Tool: An Excel-based tool to collect and analyze core EPI performance indicators (e.g., Penta1, Penta3, and MCV1) data. It allows assessment of performance by health facilities and the district as a whole.

Reaching Every District using Quality Improvement (RED-QI): An approach to strengthening the routine immunization (RI) system through the application of practical quality improvement models and tools, with the aim of making the five components of RED fully operational in a district.

REFERENCES

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2. https://www.jsi.com/resource/reaching-for-universal-immunization-coverage-results-and-program-recommendations-from-combined-immunization-coverage-and-serology-surveys-in-three-woredas-districts-of-ethiopia-in-2013-and-2016/
3. Innovating to Vaccinate Every Child in Uganda through Strengthening Subnational Management - JSI

ADDITIONAL RESOURCES

1. Uganda REC-QI how-to guide: https://www.jsi.com/resource/strengthening-the-routine-immunization-system-through-a-reaching-every-child-quality-improvement-approach-in-uganda/
2. Ethiopia RED-QI how-to guide: http://mpffs6apl64314hd71fbb11y-wpengine.netdna-ssl.com/wp-content/uploads/2016/04/UI-FHS_HowtoGuide.pdf
3. RED-QI resources and tools from Ethiopia: https://uifhs.jsi.com/resources/
4. Uganda capacity building in leadership, management, and accountability skills: https://www.jsi.com/resource/experience-in-building-capacity-of-health-facility-managers-in-uganda-on-leadership-management-and-accountability-a-missing-link-in-routine-immunization-service-delivery/
5. Toolkit for how to engage with non-health stakeholders in supporting immunization programs: https://www.jsi.com/resource/a-toolkit-for-engaging-non-health-stakeholders-in-supporting-routine-immunization-in-uganda/
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8. Article on how QI tools improved equity in routine immunization in Ethiopia: https://www.jsi.com/using-quality-improvement-tools-to-address-equity-gaps-and-improve-immunization-in-ethiopia/

Annex 1: Overview of RED-QI Approach

Annex 2: Case Study from Uganda: Engaging with Non-health Stakeholders

Annex 3: Quality Improvement Teams

Annex 4: Process mapping, fishbone analysis tool, and Plan-Do-Study-Act (PDSA) cycle

Annex 5: Model for Improvement

Annex 6: Example of the RED Categorization Tool

Annex 7: Role of a National or Regional Supervisor

Annex 8: Example of District Situation Analysis Tool

Annex 9: Example of a Health Facility Situation Analysis Tool

Annex 10: LMA Training Agenda Example

Annex 11: Mid-program Review Agenda

Annex 12: Data Quality: Percent of HFs with Accurate Data

Annex 13: Data Quality: Percent Agreement Between Reports on the Number of Penta 1, Penta 3, and Measles Doses

Annex 14: RED Categorization Database Analysis

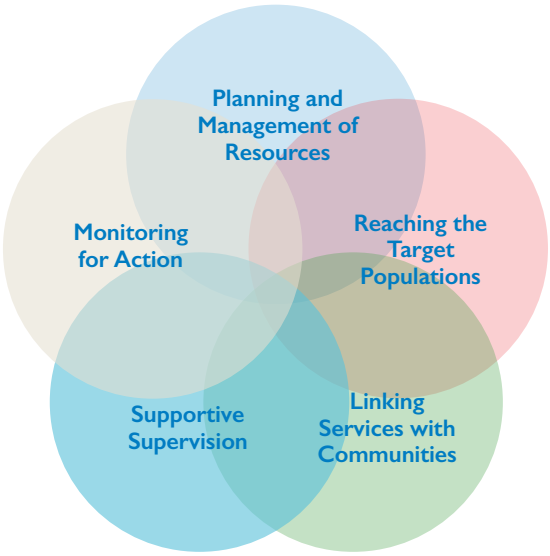
ANNEX 1: OVERVIEW OF RED-QI APPROACH

OVERVIEW OF THE REACHING EVERY DISTRICT (RED) STRATEGY AND THE RED-QI APPROACH

RED definition and goal

Reaching Every District (RED) is a strategy to achieve the goal of 80% immunization coverage in all districts and 90% nationally in the WHO member states. RED aims to fully immunize every infant with all vaccines included in the national immunization schedule of countries.

What are the RED components?



Planning and Management of Resources
Better management and use of human and financial resources

Reaching the Target Populations
Improved access to and use of cost-effective approaches to reach target populations

Linking Services with Communities
Regular meetings with HWs, the Health Unit Management Committee (HUMC), and communities

Supportive Supervision
Regular on-site teaching, planning, work plans, feedback

Monitoring and Use of Data for Action
Self-monitoring, feedback, and use of tools

RED implementation

- Many countries have implemented the RED strategy since 2002/2003.
- Good progress has been made but challenges remain in achieving the RED goal of 90% coverage nationally
  - — Limited use of data for monitoring; inadequate supportive supervision at health facility level, compounded by shortfalls in training, funding, human resources, and transportation; lack of cold chain maintenance, etc.
- To help address such challenges, the RED-QI approach was developed.

THE REACHING EVERY DISTRICT USING QUALITY IMPROVEMENT (RED–QI) APPROACH

RED and the RED-QI approach

- The RED strategy is used to strengthen management of immunization services at district level and below.
- RED-QI applies quality improvement (QI) tools and practices to RED to strengthen the **quality of management**.
- RED-QI helps health personnel at sub-national levels to implement RED—**it is not a competing model to RED**.
- The **focus of the RED-QI approach** is on **operationalizing the RED strategy**.

Fundamental RED-QI guiding principles

- "**Bottom up"** approach (focus on perspectives of communities and village health teams, health facilities, and districts)
- **Affordable** for future nationwide spread
- **Appropriate technology**; needing neither costly equipment/maintenance nor capacity beyond that of the average health facility personnel. **RED-QI tasks for each level** based on capacity
- **Foundation building** for sustained and effective immunization coverage, rather than a rapid unsustainable rise in reported "results"
- **Continuous learning and improvement**
- **Broader stakeholders participation in EPI** (not only traditional stakeholders)
- The **key stakeholders for RI:** Health workers, vaccines, and the child or targeted person(s) are **"equally essential"** for vaccination to take place
- Each level of health system **focusing on own problems** and reporting others to appropriate level
- As much as possible, limit the **"external person fear"** and encouraging the team to talk openly—"thinking loudly"

How RED-QI works

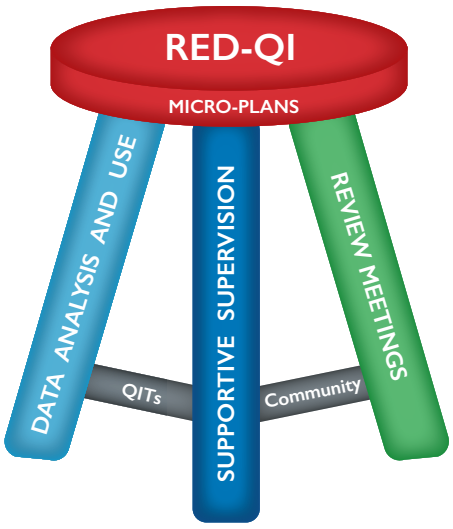
- **Jointly identify EPI-related "symptoms"** through annual RED microplanning and quarterly review meetings.
- **Jointly dig down into and work to address "root causes"** using RED-QI tools and practices that break larger problems into smaller, more "solvable" pieces.
- **Root causes can sometimes be concealed or invisible**.

RED-QI gives program managers and implementers practical tools to help them find and then vaccinate on time every eligible woman and child by:

- Diagnosing the problems by using RED microplanning and QI analysis tools
- Finding underlying causes (root 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 (e.g., one to three month PDSA "test cycles")
- Determining if the changes being made are leading to improvement

Essential RED-QI processes "Stool"

The three legs consist of: a supportive supervision system, data analysis and use, and health sub-district (HSD) quarterly review meetings (QRMs), with HF and District Health Management Team (DHMT) monthly management (MM) meetings—with a cross-cutting focus on active partnership with communities, including community as part of Quality Improvement Teams. All are connected by an annual RED microplanning process, revised quarterly and linked with smaller rapid-test change ideas from Plan-Do-Study-Act cycles.



RED-QI: Stepwise Introduction in districts: 20-24 months of support

Step 1: Orient 1-2 months

1. Pre-visit with DHT
2. Situation analysis
3. 5-day support: sensitize DHMT and stakeholders; 3-day RED-QI training on PDSA and microplanning; Note for the Record; mapping/RED tool; conduct situation analysis on EPI

Step 2: Establish and Strengthen ~6-12 months

1. 5-day operational-level training on immunization practices
2. 3-day training in RED-QI tools: child register, PDSA planning and documentation, RI monitoring charts, REC microplanning tools
3. 5-day workshop on RED-QI supportive supervision (SS) and on-the-job training (OJT) and follow-up with Quality Improvement Teams
4. 3-day Village Health Team orientation and facility microplanning workshop
5. If needed: EPI tool support; cold chain maintenance strengthening
6. 4 months of intense implementation; support DHT and health sub-districts for SS, QRMs, PDSAs
7. Exchange visits

Step 3: Sustain ~6-9 months

1. Support timed with DHMT/ health sub-district QRMs; SS visits to DHT and health sub-districts
2. Sustainability forum

RED-QI practices at Health Facility Level

1. Fully developed annual RED microplan
2. Map of catchment area updated annually
3. Monthly child registration per village
4. Annual RI program for static and outreach sessions
5. Monitoring charts (cumulative and dropout rate) updated monthly
6. Monthly defaulter tracking system
7. Monthly data quality self-assessment and improvement (updated Vaccine and Injection Material Control Book (VIMCB), child register, tally sheets and HMIS form)
8. Quarterly developed PDSA cycles documented and implemented
9. Quality improvement team (list of members, titles and contacts)
10. Monthly QIT meetings with minutes documented

ANNEX 2: CASE STUDY FROM UGANDA: ENGAGING WITH NON-HEALTH STAKEHOLDERS

Involvement of Local Leadership Helps Improve Immunization Services

Monitoring for action—using tools and providing feedback for continuous self-assessment at all levels—is a key component of RED (called Reaching Every Child in Uganda, or REC), and broad stakeholder participation in EPI, including involvement of non-traditional stakeholders outside the health sector, is a guiding principle of REC-QI.

Merging these two fundamentals through REC-QI in Kabale District allowed the District Health Team (DHT) to realize that Nyamiryango Health Center (HC) II had **not vaccinated a single child for six months,** despite having a refrigerator, gas, vaccines, and other logistics.

At a district QRM, attended by political and religious leaders and HWs from all HCs in the district, the district chairperson learned of this failure. The chairperson met with the HC In-charge (manager) and the district health officer to understand why this had happened. After explaining the various challenges faced by the HF, they worked with others to apply REC-QI practices and principles that could address the challenges systematically.

The In-charge described what happened after that. "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 HC II 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.

ANNEX 3: PLANNING FOR RED-QI IMPLEMENTATION

SS4RI
STRONGER SYSTEMS FOR ROUTINE IMMUNIZATION
A Project of JSI Research & Training Institute, Inc.

Quality Working Improvement Teams (QWITs): Alebtong District

Presentation Outline

- Definition of Quality Work Improvement Teams (QWITs)
- Composition of QWITs,
- Roles of QWITs

What are QWITs

QWIT = Quality Work Improvement Teams

- An **Immunisation Quality Work Improvement Team** at health facilities is a group of people who oversee and perform carefully selected tasks to solve identified problems affecting RI.

Composition of QWITs for RI

In RED-QI, QWITs are formed from existing structures, such as the Health Unit Management Committee (HUMC), where possible.

QWITs are at three levels:

District and health sub-district (HSD) levels—

teams focus on improving management processes and procedures.

health facility level—teams focus on improving service delivery.

- Health facility staff:
  - — Focal person (FP)
  - — EPI FP
  - — Other staff

Plus a few co-opted members who do not need transport refund and/or other allowances:

- Village Health Team (VHT)
- Local council (LC) I

Roles of QWITs

- Before QWITs initiate improvement efforts, they receive orientation to understand their roles and responsibilities and gain familiarity with the methods and tools involved in the QI process.
- QWITs meet regularly (monthly) to identify and analyze areas in need of improvement, propose solutions, and test the change ideas.
- QWITs document QI initiatives to improve routine immunization service delivery.

Documentation by QWITs

Tools used:

- QWIT minute book:
  - List of QWIT members
  - Meeting minutes
  - Broad problem
  - Aim Statement
  - Fishbone analysis
  - Action plan
  - PDSA cycle / implementation

QWIT meetings—documentation format

QWIT meeting minutes should be documented in the minute book.

MINUTES

- Date of meeting
- Members present

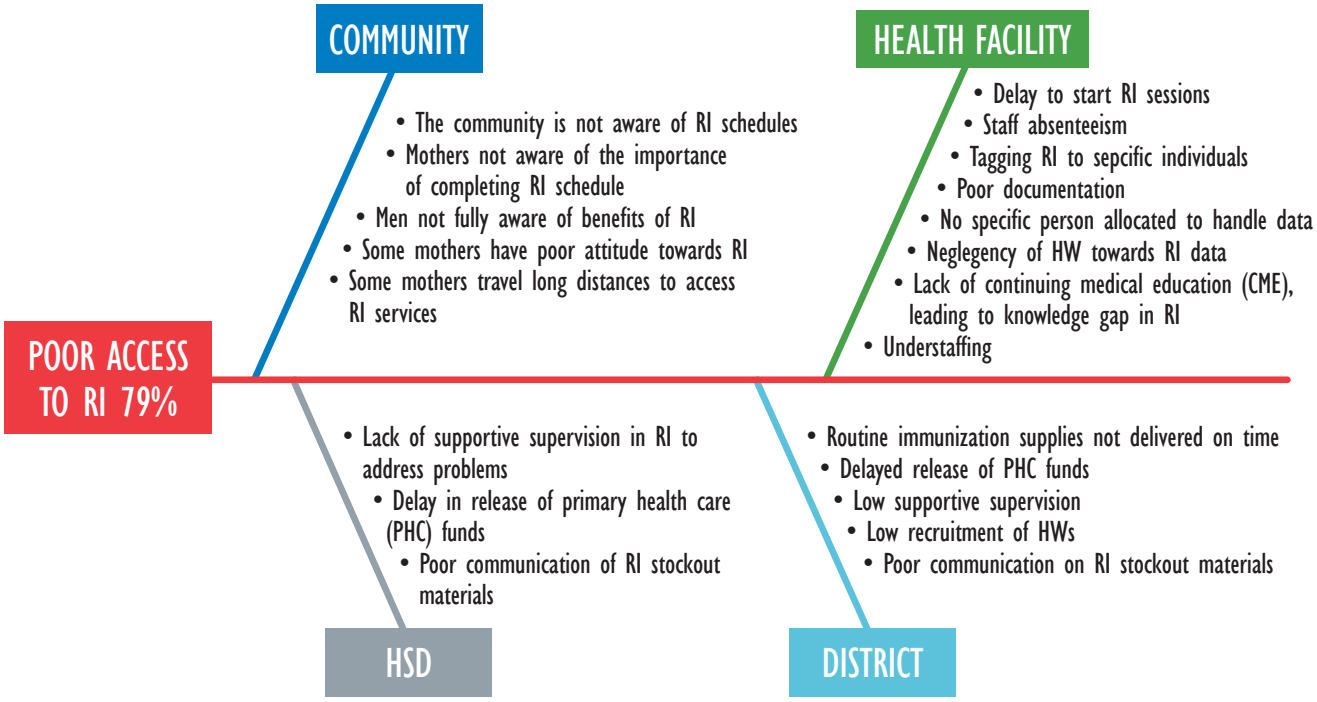
Names	Gender (Male or Female)	Title	Contact

- Selected leaders (chairperson and secretary)
- Review of previous minutes
- Review of action points:
  - Were they implemented?—Review one by one.
  - If not, why?
  - Assess implementation for adaptation.
  - Identify and agree on new problem to handle (make action plan, including those carried over).
  - Schedule for next meeting.

Documentation of PDSA implementation

Name of Health Facility: Mabira HC II

PDSA 1—Date started: March 9, 2017 Date ended: June 30, 2017	
Broad problem	Poor utilisation (12% Penta 1-3 drop out rate)
Health facility Aim/ main objective	To reduce Mabira HC II Penta 1-3 drop out rate from 12% to 8 % by June 30, 2017



Documentation of PDSA implementation
Name of Health Facility: Mabira HC II

Action plan			
Key action points	**Time Frame**	**Responsible Person**	**Data to be collected**
1. Convene HF meeting and inform staff members about the change	March 31, 2017	HF In-charge	• No. of staff attending the meeting • Copy of meeting minutes
2. Make an RI program and allocate two staff per RI session	March 31 2017	EPI focal person	• No of staff on the schedule • Copies of RI schedules developed in the quarter • No. RI sessions conducted per month with two HWs • No. of children immunised per RI session
3. Put up a staff registration book at every RI session	April 1, 2017 on going	EPI focal person	• No of staff registering in the book at every RI session • No. children immunised per RI session

Decision taken as of June 30, 2017

Action plan		
Key action points	**Results**	**Decision taken**
1. Convene HF meeting and inform staff members about the change	Increased staff participation	To continue discussing RI performance monthly in staff meetings **Adopted Action**
2. Make a RI program and allocate two staff per RI session	Every staff involved. Caretakers not waiting for long.	**Adopted Action**
3. Put up a staff registration book at every RI session	All staff arriving on time. DOR reduced from 12 % to 6%.	**Adopted action**

ANNEX 4: PROCESS MAPPING, FISHBONE ANALYSIS TOOL, AND PLAN-DO-STUDY-ACT (PDSA) CYCLE

https://uifhs.jsi.com/wp-content/uploads/2019/08/QIquickreference_Final.pdf

ANNEX 5: MODEL FOR IMPROVEMENT

MODEL FOR IMPROVEMENT

The Model for Improvement is a framework to guide QI. It is intended to accelerate improvement. The model has two parts (as shown in Figure 1 below):

- Three fundamental questions, which can be addressed in any order
- The Plan-Do-Study-Act (PDSA) cycle to test changes in real work settings; the PDSA cycle guides the test of a change to determine if the change is an improvement

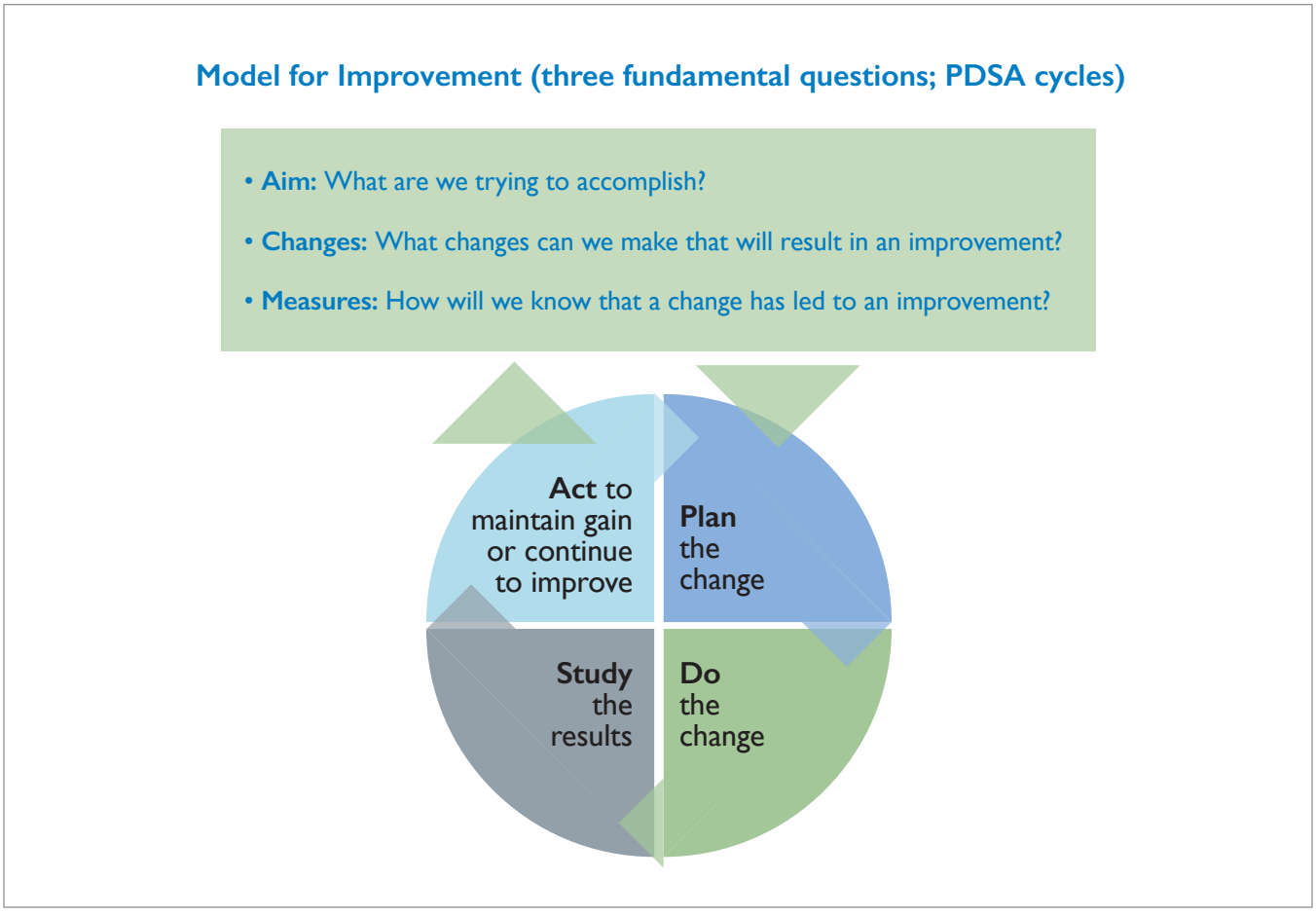
The fundamental questions for improvement

Aim: What are we trying to accomplish? The aim should be time specific and measurable. It should also define the specific population or system that will be affected, based on the identified priority problem.

Changes: What changes can we make that will result in an improvement?

Measures: How will we know that a change has led to an improvement? Teams use quantitative/qualitative data to verify if: 1) the change took place; and 2) the change is on the pathway to achieving the aim.

Figure 1. The QI Model for Improvement



ANNEX 6. RED CATEGORIZATION TOOL EXAMPLE AND GUIDANCE

Example of a Completed RED Categorization Tool

Analysis of Health Facility Data Using RED Categorization	
Name: KAPCHORWA DISTRICT	Criteria
Goal: Increase immunization coverage to at least 90% with all vaccines in every district	DPR1 coverage
Category 1 = high coverage (>90%), low drop out (<10%)	90%
Category 2 = high coverage (>90%), high drop out (>10%)	Dropout rate
Category 3 = low coverage (<90%), low dropout (<10%)	10%
Category 4 = low coverage (<90%), high dropout (>10%)	

HSD	Compile Population, Immunization							Analyse Problem					
Sub-County	Target Population	Doses of Vaccine Administered			Immunzation Coverage (%)			Unimmunized (no.)		Dropout (rates %)		Identify Problem		Categorize Problem
Health Facility		DPT1	DPT3	Measles	DPT1	DPT3	Measles	DPT3	Measles	DPT1-DPT3	DPT1-Measles	Access	Utilization	Category 1,2,3, or 4
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Kapchorwa District	1,226	992	765	967	81%	62%	79%	461	259	23%	3%	poor	poor	Cat. 4
Tingey HSD	1,226	992	765	967	81%	62%	79%	461	259	23%	3%	poor	poor	Cat. 4
Chema Sub-county	111	28	19	36	25%	17%	33%	92	75	32%	-29%	poor	poor	Cat. 4
Chemosong	111	28	19	36	25%	17%	33%	91.5	74.5	32%	-29%	good	poor	Cat. 4
Munarya Sub-county	72	70	53	79	97%	74%	110%	19	-7	24%	-13%	good	poor	Cat. 2
Chebonet	72	70	53	79	97%	74%	110%	19	-7	24%	-13%	good	poor	Cat. 2
Kapchorwa Town Council	227	286	230	226	126%	101%	100%	-3	1	20%	21%	good	poor	Cat. 2
Kokwomurya	21200	15	12	23	73%	59%	112%	9	-3	20%	-53%	poor	poor	Cat. 4
Kapchorwa Hospital		236	189	174	118%	95%	87%	11	26	20%	26%	good	poor	Cat. 2
Reproductive Health Uganda	7	35	29	29	53%	446%	446%	-23	-22.5	17%	17%	good	poor	Cat. 2

Guidance

- **Using the data from the macro-map and the district biostatistician, complete the first five columns:**
  - Column 1: Enter the name of the HF under each sub-county and HSD.
  - Column 2: Enter the target populations.
  - Columns 3 to 5: Enter the number of doses of the different vaccines.
- Do not enter data into the remaining columns. These columns contain formulas that auto-calculate coverage, unimmunized children, DORs, and RED categorization based on access (Penta 1) and utilization (Penta 1–3 DOR).

ANNEX 7: ROLE OF A NATIONAL OR REGIONAL SUPERVISOR

Role of a National or Regional Supervisor

Phase 1. Getting started with RED-QI

- Emphasize how the RED-QI approach can improve health worker performance, improve the efficiency and effectiveness of RI services, and address gaps to reaching all communities with life-saving vaccination.
- Encourage immunization teams to include stakeholders (district administrators, community members) to engage in and support the approach.
- Underscore that the approach is part of a national strategy to improve the RI program and outline what support will be provided to implement the approach over the next several years.
- Lastly, encourage your health workers to be innovative and problem solvers. Clarify the amount of autonomy that facility managers and health workers have in solving local issues. Remind your teams that they have the ability to make changes for the better!

Phase 2. Establishing RED-QI and strengthening systems

- As you can, support joint meetings with district administrators to ensure cooperation between the administrative and health sectors of each district. Discuss the importance of agreeing on the activities in the microplan and work to ensure funding of the microplan.
- Support RED-QI activities (e.g., quarterly review meetings and monthly QIT meetings) and monitor implementation of these activities at the district level.
- Commit to a long-term capacity-building strategy that includes regular supportive supervision and on-the-job training, opportunities for peer learning to help mitigate the effects of staff turnover, and support for teams through distribution of job aids.

Phase 3. Maintaining and sustaining improvements in RED-QI

- Support (technically and financially) critical activities (QRMs, QIT meetings, supportive supervision visits, annual planning, and promotion of active use of EPI data).
- Monitor that the RI system has been strengthened. Consider looking at indicators such as:
  - Better scheduling of outreach or mobile sessions
  - Fewer stockouts of vaccines
  - More frequent static services, if needed
  - More accurate estimates of target population
  - More reliable local financing
  - Community engagement in planning processes and QITs

ANNEX 8. DISTRICT SITUATIONAL ANALYSIS DATA COLLECTION FORM

DISTRICT SITUATIONAL ANALYSIS FORM			
Section-I: Introductory information			
Names of people conducting interview:			
Name(s) and positions of those being interviewed			
District:			
State/Region/Province:			
Section-II: Information from district HMIS			
II A: Demographic information			
Number of villages in district:	Total:	Urban:	Rural:
Recent completed year population:	Total:	Urban:	Rural:
Recent completed year total under one year population:	Community census:		
	Government estimate:		

II B: Total number of facilities					
Hospitals		Health centers		Health posts	

II C: Staffing					
Facility type	Total #	EPI focal person (YES/NO)	PHCU/Health Extension Supervisor (YES/NO)	HMIS focal person (YES/NO)	Remark
District office					
Health centers					

Section-III: Information from District EPI unit					
III A: Total number of public facilities providing EPI services in recent completed year					
Hospitals:		Health centers:		Health posts:	
Number of Fixed sites		Number of outreach sites:		Number of mobile sites:	

III B: Total number of refrigerators by level		
Facility types	Functional	Non-functional
Health posts		
Health centers		
District office		

III C: Planning for routine immunization (RI)

Is there a separate microplan for routine EPI at district level?	Yes	No

IF YES: Who was involved in development of the microplan? (tick all who participated from the below)

HEWs	HWs from HCs	District EPI or FP	District administrator	Other (Specify):

Is the microplan prepared in more detail than the district based-plan?	Yes	No

IF YES: What additional activities/areas were planned? (tick all that apply)

Resource Planning and management	Reaching the target populations	Linking services with communities	Supportive supervision	Monitoring for action

III D: Mapping of EPI catchment

Were past year vaccination session plans prepared to cover all villages (including the hard-to-reach area) in the district?		Yes	No
Does the district map out its catchment area? (take picture of district map if available)		Yes	No
Do health facilities map out their catchment area?	Yes, all facilities	Yes, some facilities	No

III E: Capacity building and management plan

What did last year's capacity building and management plan include? (check yes for all those included):			By whom	FY plan
Immunization in Practice (IIP) training	Yes	No		
Integrated Refresher Training (IRT)	Yes	No		
Mid-Level Managers (MLM) training	Yes	No		
Cold chain and vaccine management	Yes	No		
Other, specify	Yes	No		

III F: Implementation of EPI activities

Is monitoring of the EPI microplan implementation done for (year)?	Yes	No
If YES, were all planned immunization sessions carried out?	Yes	No

If YES, immunization sessions implemented	Number	Percent	Remark
Fixed sites:			
Outreach sites:			
Mobile sites:			

If NO, why were planned immunization sessions not conducted?

III G: Supportive supervision

How many supportive supervision visits were conducted from district to health facilities/health centers?	In (year)	
	In (year)	

If supportive supervision was planned but not conducted, what were the main reasons for cancellation?

Checklist: Did you use checklists when you conducted supportive supervision? (if yes, take picture of a used one)	Yes	No

If some visits were not conducted, what were main reasons for cancellation?

Feedback: How is feedback given during supportive supervision? (check all that apply)			
Written feedback	On-site feedback	During review meeting	Other:

III H: Review meetings		
Were any review meetings conducted in the last two years? (ask for a copy of last meeting's minutes, if available)	Yes	No
If YES, how many review meetings were conducted?	In (year)	
	In (year)	
What were the key RI topics that were discussed at the last review meeting?		

III I: Vaccine wastage		
Was vaccine stock monitored regularly through monthly reports? (if yes, see documented evidence)	Yes	No
Was vaccine wastage monitored? (if yes, see documented evidence)	Yes	No
If YES: was any feedback given to facilities on level of wastage?	Yes	No
If feedback given: Is vaccine wastage used as an indicator of performance and for ranking of facilities?	Yes	No
Was injection safety monitored? (may need to see health facilities)	Yes	No
If YES: how?		
If NO: why?		

III J: Monitoring temperature		
Was refrigerator temperature monitored? (may need to see health facilities)	Yes	No
If YES, is it current?	If No, why?	

III K: Steering Committee activities		
Steering Committee: Is there a Steering or other committee that plans and monitors routine EPI activities? (if yes, see documented evidence)	Yes	No

If YES: How often does the Steering Committee/other committee meet? (check which one applies)				
Weekly	Every two weeks	Monthly	Quarterly	Other (specify):

If YES: who regularly attends the meetings?
Do you have any suggestion on how to improve it further?

III L: Focal persons activities		
EPI focal person: Is there a designated focal person for EPI at district level?	Yes	No
If YES: Was the EPI focal person trained on EPI?	Yes	No
If NO: who is in charge of EPI?		
Cold chain focal person: Is there a designated focal person for cold chain in the district?	Yes	No
If YES, the cold chain focal person trained on EPI and cold chain?	Yes	No
Surveillance focal person: Is there a designated focal person for surveillance at district level?	Yes	No
If YES: Is the surveillance focal person trained on surveillance?	Yes	No

III M: Budget and logistics					
Budget: How does the district get financial support from the district council?					
Specific to EPI	Family health program	Not program specific			
Is financing a concern for EPI in your district?		Yes	No		
If YES: What are the areas that need more funding, for which funding is limited? (check all that apply)					
Transportation of vaccines	Kerosene for refrigerators	General fridge maintenance	Per diem (SS, outreach)	Other (specify):	
Are there any reports/minutes of discussion on RI held between the community leaders or other influential people with the district/HF staff during (year)?				Yes	No
If YES, how frequent are these meetings at district and HF level?					

ANNEX 9: SITUATION ANALYSIS DATA COLLECTION FORM: HEALTH FACILITY

Date of interview		Start time		End time	
Name of interviewer					
Names and positions of interviewees					
A. Background information					
1. Name of health facility					
2. Level of health facility					
3. Quarter being reviewed					
B. Microplanning					
4. Does the health facility have a current EPI microplan, where at least 50% of the forms have been completed?				a. Yes	b. No
5. If No, state which tools are incomplete or are unavailable?					
6. Does the facility have a current micromap?				a. Yes	b. No
7. If Yes, did VHTs participate in its development?				a. Yes	b. No
8. If No, state the reasons why?					
C. Data analysis and use					
9. Does the facility have a printed copy of the completed RED categorization tool?				a. Yes	b. No
10. Where was the tool generated from?		a. District	b. HSD	c. IP	d. Other
11. Does the facility have a current EPI performance monitoring chart displayed?				a. Yes	b. No
12. If Yes, what is the most recent month plotted on the chart? (MM/YYYY)					
13. If no chart is available or if it's not up to date, state the reasons why?					
D. Routine immunization sessions					
14. Does the facility have a displayed RI schedule?				a. Yes	b. No
15. If Yes, is it a predictable schedule?				a. Yes	b. No
Provide below details of the planned and conducted RI sessions for the quarter under review					
Nature of RI sessions		Number planned for the quarter		Number conducted in the quarter	
16. Static sessions					
17. Community outreach sessions					
18. If some planned static sessions were not conducted, state the reasons why?					
19. If some outreach sessions were not conducted, state the reasons why?					

E. Quality Work Improvement Team meetings

20. Does the facility have an immunization-focused QWIT?			a. Yes		b. No	
If Yes, review meeting minutes for the quarter under review						
21. Were QWIT meetings held in these months? *(only indicate Yes if the minutes are available)*	Month 1		Month 2		Month 3	
	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
22. On what dates were the meetings held?						
23. Were RI issues discussed during those meetings?	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
24. Did non-traditional stakeholders attend these meetings?	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
25. If a facility doesn't have a QWIT, state the reasons why?						
26. Have you heard of the concepts of PDSA cycles?	a. Yes		b. No			
27. If Yes, have you attempted RI-related improvements at this facility using the PDSA model for improvement?	a. Yes		b. No			

28. If Yes, please describe any improvement effort related to RI that has been implemented in the past financial year based on the PDSA model for improvement:

a. What was the problem being addressed?	
b. What was the root cause of the problem?	
c. What changes were implemented?	
d. What specific action steps did you take?	
e. What results were observed?	
f. Any other observations regarding PDSAs?	

F. Technical capacity for routine immunization

29. Number of qualified health staff at this health facility		
30. Number of qualified health staff involved in RI service delivery		
31. Number of RI trainings attended by some of your staff in the last quarter	a. Yes	b. No
32. State any other RI-related trainings attended by staff in the past year		
Availability of MoH technical information on RI (inquire if the following documents are available):		
33. Immunization in practice (IIP) manual	a. Yes	b. No
34. UNEPI Standards Book	a. Yes	b. No
35. PCV manual	a. Yes	b. No
Review the facility supportive supervision book to obtain the following information about supervision visits		
36. Did the facility receive supportive supervision?	a. Yes	b. No
37. If Yes, was RI discussed during supportive supervision?	a. Yes	b. No

G. Vaccine stock management

38. Does the facility have a functional EPI refrigerator?	a. Yes	b. No
39. If Yes, are cold-sensitive vaccines stored away from the freezing compartment?	a. Yes	b. No

40. Indicate the number of days during the quarter under review when the following antigens were out of stock:

	BCG		TT		Measles	
	Penta 1		OPV		PCV	

H. Data management

41. Availability of HMIS tools at the facility

HMIS tool	Is it the original MoH supplied tool?		Is it an improvised photocopy of the original?		Is it up to date?	
a. Child registers	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
b. RI tally sheets	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
c. Child health cards	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
d. Vaccine and injection materials control book	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
e. Temperature monitoring chart	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
f. HMIS 105 forms	a. Yes	b. No	a. Yes	b. No	a. Yes	b. No
42. Are separate child registers used for static and outreach RI services?					a. Yes	b. No
43. Are the children in the child register grouped as per their villages?					a. Yes	b. No
44. Perform recounts to obtain and compare DPT3 data captured in the different tools for the quarter under review					a. Yes	b. No

Antigen	Month in quarter	Child register	Tally sheets	HMIS 105	Comments
DPT3					

I. Reaching every village with RI services

45. To determine the level of reach of RI services to all communities, review the child register to determine which villages were served with RI services in the quarter under review

	List of villages in health facility catchment area	Tally if at least one child from that village was captured in the child register for the quarter under review
a.		
b.		
c.		
d.		
e.		
f.		
g.		
h.		
i.		
j.		
k.		
l.		
m.		
n.		
o.		
p.		
q.		
r.		
s.		
t.		
u.		
v.		
w.		
x.		
y.		
z.		

ANNEX 10: AGENDA: ORIENTATION OF FACILITY MANAGERS IN LEADERSHIP AND MANAGEMENT

Time	Activity/Topic	Presenter
8:30am–9:00am	Arrival and registration	
9:00am–9:15am	Climate setting (introduction, expectations, objectives and output)	
9:15am–9:30am	Opening remarks and admin issues	
9:30am–10:00am	**Performance review** • RI coverage and DOR to date (FY 2016/2017 and QI 2017/2018) • REC-QI uptake • Leaders' commitments from national forum	
10:00am–10:30am	Morning break tea	
10:30am–11:15am	Overview of leadership and management • Applied Leadership and management in health care delivery • Definitions of a leadership and management • The distinction between the two • Qualities of a good leader, qualities of a good manager The role of the HF In-charge as a manager and leader	
11:15am–11:40am	**Open panel discussion** 1. What is your role as an In-charge to motivate your staff? 2. What is your role as a leader and manager in mobilize of additional resources for immunization? 3. What is your role as a leader and manager in engaging with the community and other partners? 4. Discuss challenges and strategies of using locally available data for decision making • HC II • HC III • HC IV	
11:40am–12.30pm	**Group work by sub-county** Discuss and outline what a HF In-charge should do as a leader in each of the areas below to impact on RI performance: • Human resource management • Efficient use of available resources (cars, motorcycle, fridges, etc.) • Finances • Planning • Service delivery • Mobilisation • Coordination	

Time	Activity/Topic	Presenter
12:30pm–1:00pm	**Presentation in gallery walk** Sub-county team pins up their responses / deliberations in one corner	
1:00pm–2:00pm	Lunch break	
2:00pm–2:30pm	Plenary feedback from group discussion—key learnings from groups visited	
2:30pm–3:00pm	**Plenary discussion** **Take-home messages:** • What good practices and new lessons have we picked up from this meeting to take to our HFs? • What do we commit ourselves to act on as we go back to our HFs? • Utilization of leadership journals	
3:00pm–4:00pm	**Introduction to HF whole-site engagement in on-the-job training (OJT) and supportive supervision (SS)** • Objectives • Participants: — Terms of reference — Introduction to the VHT child registration template — Reporting guide	
4:00pm–4:30pm	**Review the plan for OJT–SS** • Teaming for supervisors • Scheduling of HF to be supervised in the three days (Tuesday, Wednesday, and Thursday) • Mobilisation of the VHTs, parish chiefs, and sub-county chiefs and HWs by In-charges • Disseminate materials • Terms of reference/talking points • Reporting guide • Village Child Registration Template Attendance/registration forms • Mobile Money forms and consent forms	
4:30pm–5:00pm	Afternoon break and departure	

Note: In-charges attend in person. No delegation.

ANNEX 11: RED-QI MID-PROGRAM REVIEW AGENDA

Objectives

- To share key findings of project data
- To update on achievements and challenges related to implementing RED-QI in districts
- To identify RED-QI tools and activities that should be adapted based on local contexts
- To develop district-specific action plans for the next 12 months
- To learn effective methods of supportive supervision, on-the-job training, and mentoring

Agenda

Time	Activity	Presenter	Facilitator	Notes
Day 1				
9:00am–9:10am	Welcoming address			
9:10am–9:20am	Review of agenda and objective of the meeting			
9:20am–10:50am	Review of project data/findings			
10:50am–11:05am	Tea break			
11:05am–12:30pm	Review of project data/findings (cont.)			
12:30pm–1:30pm	Lunch			
1:30pm–3:00pm	What's working: Facilitated discussion of achievements after implementing RED-QI approach for one year			
3:00pm–3:15pm	Tea break			
3:15pm–5:20pm	What are the challenges: Facilitated discussion of challenges after implementing RED-QI approach for one year			
5:20pm–5:30Pm	Daily wrap up			
Day 2				
9:00am–10:50am	Overview of day's agenda and small group work: How to address top three challenges to RED-QI implementation			
10:50am–11:05am	Tea break			
11:05am–12:15pm	Presentation of findings from small-group work and discussion			

Time	Activity	Presenter	Facilitator	Notes
12:15pm–1:15pm	Lunch			
1:15pm–3:00pm	Break-out working groups: Challenges and solutions with using either the PDSA cycle or the fishbone analysis tool, and in the functioning of QITs—what adaptations are necessary?			
3:00pm–3:15pm	Tea break			
3:15pm–4:30	Presentations from small groups on solutions to challenges			
4:30pm–5:00pm	Homework for planning day tomorrow and daily wrap-up			
DAY 3				
9:00am–9:30am	Overview of day and presentation on planning objectives for next 12 months			
9:30am–11:15am	Individual planning by district (facilitators to support)			
11:15am–11:30am	Tea break			
11:30am–1:00pm	Planning continues			
1:00pm–2:00pm	Lunch			
2:00pm–2:30pm	Wrap-up and departure			
Day 4				
9:00am–10:30am	BMGF and MOH update			
10:30am–10-45am	Tea break			
10:45am–12:30pm	Data (M&E) skills building			
12:30pm–1:30pm	Lunch			
1:30pm–2:30pm	Data (M&E) skills building (cont.)			
2:30pm–3:00pm	Brainstorming (group work) on priority areas (effort/impact)			
3:00pm–3:15pm	Tea break			
3:15pm–3:30pm	Brainstorming (cont.)			
3:30pm–4:10pm	Group work presentation and discussion and prioritize efforts			

Time	Activity	Presenter	Facilitator	Notes
4:10pm–5:00pm	Managing the activities of the project: Focus on meeting the project objectives, completing scheduled activities within the project year Tools: activity tracker, activity sheets, monthly plans, weekly plans			
5:00pm–5:20pm	Next steps			
5:20pm–5:30pm	Closing			
Day 5 supportive supervision workshop facilitation orientation				
9:00am–10:00am	What we know about supportive supervision (SS) and principles of adult learning			
10:00am–10:30 am	Planning and preparing for SS and SS checklist			
10:30am–10-45am	Tea break			
10:45am–11:15am	Effective communication			
11:15am–12:15pm	Conducting SS and problem solving, action planning, and follow-up			
12:15pm–12:30pm	Discussion			
12:30pm–1:30pm	Lunch			
1:30pm–3:00pm	Providing on-the-job training (OJT) and mentoring			
3:00pm–3:15pm	Tea break			
3:15pm–3:45pm	Providing OJT (cont.)			
3:45pm–4:15pm	Using SS results			
4:15pm–4:55pm	Preparation for field visit and lessons learned from field visit			
4:55pm–5:15pm	Managing competing priorities and next steps			

ANNEX 12: DATA QUALITY CHECK FORM A: COMPARISON OF SIMILARITIES AMONG SELECTED DATA SOURCES

Data Quality Check Tool A: Comparison of similarities among selected data sources

Region		Zone		District		Health facility		Date
S. No	Selected indicators	Selected Data Sources			Verification Factor (Vf)			
		(A) EPI register or tickler file	(B) Monitoring chart	(C) Report	VF(a) = [(A)/(C)] * 100%	Margin of error	VF (b) = [(B)/(C)] * 100%	Margin of error
1	Penta 1							
2	Penta 3							
3	Measles							

Note: Verification factor/consistency ratio = [number recounted from data source/reported data] * 100%

Margin of error = absolute value of (100-verification factor)

If the margin of error is 0-10%, ADEQUATE

If the margin of error is 11-20%, ACCEPTABLE

If the margin error is >20%, POOR

ANNEX 13: DATA QUALITY CHECK FORM B: COMPARISON OF SIMILARITIES AMONG REPORTS AT ALL LEVELS

Data Quality Check Form B: Comparison of similarities among reports at all levels

QUARTER		M 1 : M 2 : M 3 :			REGION				ZONE				
DISTRICT					PHCU				HEALTH				
S. No	INDICATORS	Reports at all levels (Put the absolute numbers (not percentages) under each boxes)									All sources similar?			Remark
		Health Post			PHCU			DISTRICT			YES / NO / NA			
		M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	
1	Penta 1													
2	Penta 3													
3	Measles													
Number of 'YES' responses														
ACCURACY RATE (%)														

DECISIONS: If the responses of 'YES' for all indicators for one month or the percent of similarities among the indicators for the month is 100%, we can consider the data quality is good/strong. If one of the indicators becomes 'NO' for the month, we can assume that the data quality is poor.

TIPS: ACCURACY RATIO (AR)

It is the concordance/matching between the actual data on the data reported by health facility (HP) to the next level (PHCU) and District Health Office. It is measured through checking the consistency of the monthly reports along the levels. When we found it similar, we put 'Yes' across the observed indicator, but if there is no similarity from one level to the other, we put 'No.' Finally, the accuracy ratio will be calculated by taking all the numbers of observations as a denominator and all 'Yes' responses as numerator.

Accuracy Ratio = all 'yes' responses/sum of maximum scores that could be obtained

A "no" scores 0, a "yes" scores 1, and an "NA" is not recorded in the denominator. The overall AR is the proportion generated as the sum of all numerators and all denominators.

ANNEX 14. RED CATEGORIZATION DATABASE INSTRUCTIONS

There are seven main sheet tabs in the database: monthly data, cumulative data, quarter data, analysis by month, analysis by quarter, progress by quarter, and graph sheets. All the sheet tabs are protected to prevent structural modifications and unintentional change to the formulas. However, the first two sheets, "Instruction" and "Monthly data," sheet tabs allow data entry. Users of the database should update the instruction sheet once a year (fiscal year (FY), categorization criteria and general information). The monthly data sheet tab also has unlocked cells that allow the users to enter monthly data. Hence, monthly data for each HP can only be entered on the monthly data sheet tab. The rest of the sheets will automatically update based on the data entered in monthly data sheet.

1. The "Monthly data" sheet tab captures the monthly data of each health facility. The database automatically adds up the value: Penta 1, Penta 3, measles, and annual target at the top of the sheet. All the analyses and graphs on the subsequent sheets are based on the data entered in this sheet.

2. The "Cumulative data" sheet tab automatically calculates the cumulative values by adding previous month(s) total to the current month data.

3. The "Quarter data" sheet helps to compare data by quarter so that each month's data will be added. This sheet has the summative value of the months' data entered into the last column, and the graph for coverage and drop out is based on this column.

4. The "Analysis by month" sheet displays coverage for Penta 1, Penta 3, and measles; number of unimmunized children for Penta3 and measles; Penta1 to Penta3, and Penta1 to measles dropout rates (DOR); and accessibility and utilization status. Finally, the problem is categorized from 1 to 4.

   Accessibility: Good when Penta1 coverage is equal or above 90%, otherwise poor;
   Utilization: Good when DOR of Penta 1 to Penta 3 is below 10% and non-negative, otherwise poor

   Category 1 = high coverage (>=90%), low drop out (<10% and non-negative)

   Category 2 = high coverage (>=90%), high dropout (>=10%)

   Category 3 = low coverage (<90%), low dropout (<10% and non-negative)

   Category 4 = low coverage (<90%), high dropout (>=10%)

5. "Analysis by quarter" and "Progress by quarter" sheets summarize the data by quarter.

6. The "Graph" sheet displays some basic graphs. The user of this database can add other graphs as needed.

7. There is an auto filter activated on sheet tabs that helps to select part of the variables.

Note: When a filter applies to the data, the graph shows the filtered items only.