A RESOURCE GUIDE FOR CONTINUOUS QUALITY IMPROVEMENT

THE NEED FOR AN EVIDENCE DRIVEN APPROACH TO IMPLEMENTING QUALITY IMPROVEMENT METHODOLOGIES IN RESOURCE-LIMITED SETTINGS

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UNIVERSITY of MARYLAND BALTIMORE

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Acronyms and Abbreviations

Abbreviations	Names
AIDS	Acquired immune deficiency syndrome
ANC	Antenatal clinics
aPNS	Assisted partner notification services
ART	Antiretroviral therapy
BPACE	Botswana Partnership for Advanced Clinical Education
BUMMHI	Botswana-University of Maryland School of Medicine Health Initiative
CAGs	Community adherence groups
CD4	Cluster of differentiation four
CDC	Centers for Disease Control and Prevention
CHMT	County health management team
Ciheb	Center for International Health, Education, and Biosecurity
CIRKUITS	Community Impact to Reach Key and Under-served Individuals for Treatment and Support
CQI	Continuous quality improvement
DHIS2	District Health Information Software 2
DOT	Directly observed therapy
ECHO	Extension for Community Healthcare Outcomes
eHTS	Electronic HIV testing services modules
EID	Early infant diagnosis
FIT	Family index testing
GON	Government of Nigeria
HIV	Human immunodeficiency virus
HIVQUAL	HIV quality of care
HSDA	Health service delivery awards
HSS	Health systems strengthening
HTS	HIV testing services
INH	Isoniazid
KHQIF	Kenya HIV quality improvement framework
LP/RHMT	Local partners/regional health management teams
LRRR	Line rescreening rebooking record principle
LTFU	Loss to follow-up
M&E	Monitoring and evaluation
MMD	Multi-month dispensing
MMS	Multi-month scripting
MOH	Ministry of Health
MOHW	Ministry of Health and Wellness
NCDs	Non-communicable diseases

Abbreviations	Names
NDR	National Data Repository
NMRS	Nigeria Medical Record System
OTZ	Operation Triple Zero
OVC	Orphans and vulnerable children
PACT	Partnership for Advanced Care and Treatment
PAMA	Papa and mama
PDSA	Plan-Do-Study-Act
PEPFAR	President's Emergency Plan for AIDS Relief
PIA	Performance improvement approach
PLWH	People living with HIV
PMTCT	Preventing mother to child transmission
POC	Point of care
PrEP	Pre-exposure prophylaxis
QI	Quality improvement
QM	Quality management
R/CHMTs	Regional and council health management teams
RBC	Rwanda Biomedical Center
REACH	Reaching, Engaging, and Acting for Health
SIMS	Site improvement through monitoring systems
SMACHT	Stop Mother and Child HIV Transmission
SOPs	Standard operating procedures
SQUIRE	Standards for quality improvement reporting excellence
T4A	Text for adherence messages
TB	Tuberculosis
TXCur	Treatment current
UAGs	Urban adherence groups
UMB	University of Maryland, Baltimore
USAID	United States Agency for International Development
VCT	Voluntary counseling and testing
VL	Viral load
Z-CHECK	Zambia Community HIV Epidemic Control for Key Populations

Section 1

SCOPE AND INTENDED USERS

Scope

This CQI resource guide can be used to:

1. Assist users to conceptualize CQI challenges and engage in a process for systematically gathering key information and engaging key stakeholders to identify solutions to priority public health problems.

2. Provide practical evidence on CQI implementation within the framework of health-related projects and provide guidance for implementing CQI interventions. It further facilitates the trained healthcare professional with an understanding of how to use these various tools and methods, as well as CQI related knowledge in executing projects.

3. Provide proven and replicable CQI strategies for improving health outcomes in health and non-health sectors

4. Provide information to all stakeholders—both public and private—on the basic elements, functions of CQI, and how to integrate a simple digital platform for real-time tracking of any selected metrics in the CQI cycle.

While the resource guide provides a good introduction to CQI, it is not recommended that the resource guide be used as a standalone resource without additional forms of training, support, and guidance. This guide does not provide a universal guide for CQI; instead it presents a process that can be applied in diverse country contexts to tailor quality improvement initiatives to local conditions. The right tool and improvement strategy will depend on the organization's local context. This guide can be used to help healthcare professionals and decision makers systematically consider the different evidence-based CQI strategies and tools based on 15 years of experience geared towards improved health outcomes at the University of Maryland, Baltimore (UMB) and the Center for International Health, Education, and Biosecurity (Ciheb). If you have any questions about the content of this guide, or about UMB and Ciheb CQI, please visit the website www.ciheb.org/CQI.

Intended Users

Our CQI approach is flexible and can be applied to different settings.

Typical users of this resource guide include:

Government organizations/ministries of health: Ministry of Health (MOH) staff can use this resource guide as a reference for designing CQI approaches that meet their needs, as well as produce information and recommendations they are seeking. **Sections 3, 4, and 5** outline the Ciheb CQI methodology and process, and how it can seamlessly be adapted to unique country circumstances. Our CQI approach has been useful and successful in countries where:

- The MOH, and other stakeholders such as private and/or civil society actors, are directly involved in all the steps of CQI.
- The country is applying for grants or other funding, or is in discussions with development partners about future assistance. The CQI approach could contribute to or inform the government input into a partner's project design, work plan, or both.

International and local development partners: International and local development partners (non-governmental organizations) have often funded or received funding for service delivery and performance improvement. This resource guide can inform the investments in a country and can be used for program planning, which are targeted at improved outcomes.

Sub-national health care management teams: Healthcare team leaders should thoroughly read **sections 2, 3, and 4** of this guide. **Section 6** describes how to further monitor CQI initiatives through the CQI digital platform, and **sections 4 and 7** detail the steps in the CQI process so team leaders can direct their team members to analyze cross-cutting health system issues. In addition, team leaders should make use of templates and guides for planning and implementing the assessment and track progress over time (see **sections 4 and 7).**

Facility healthcare team members: Team members should review all sections of the resource guide to broadly understand the CQI concept, set-up, process, and how the core health system functions are related to one another. CQI team members can benefit from tools outlined in **section 4** and on our website (www.ciheb.org/CQI). Team members utilize this resource guide for replicating evidence-based approaches. They are also encouraged to understand how to use the resources for data collection, analysis, cross-cutting analysis, and report formulation, and to take corrective measures. If team members are inexperienced with the CQI approach, then **sections 2, 3, and 4** will be critical.

Section 2

BACKGROUND AND INTRODUCTION

An overview of CQI

Quality improvement can be used to address challenges in service delivery in health systems in developed and developing countries. CQI has proven to be very effective in resource-limited settings and has the potential to optimize the use of limited resources available from governments and global initiatives targeted at achieving shared aims.

When institutions face complex problems with their performance or outcomes, the common approach is for organizations to encourage staff to work harder, provide more training, or allocate additional staff and/or resources rather than addressing underlying issues in existing processes. In contrast to conventional methods, CQI focuses on processes and seeks to identify root causes resulting in gaps in the processes and how steps within a process can be improved to affect the outcome. CQI differs from other methods in that it does not judge the data as good or bad, but as a tool to help an institution constantly improve.

Figure 1

What do we mean by quality? Quality is always defined in terms of the experience and outcomes received by the customer. In this case, the customer is the end user or recipient of health services, regardless of whether they receive free services or pay directly for those services. Quality, then, is an attribute of any output from a process that meets a customer's needs. Improvement is any action that increases the quality of the services or product received by the customer, or increases the efficiency of service delivery. Adequate healthcare is as much about process as it is about outcome. In most cases, the relationship between processes and outcomes is not well understood. Better outcomes are achieved when the critical pathways are followed (Figure 1). By mapping pathways for services, institutions can understand what and how quality care is provided.

What do we mean by continuous? Continuous improvement is the regular and active engagement of the facility/organization in efforts to increase the quality and efficiency of its processes. As one improved process stabilizes, the facility/organization will then look to identify the next improvement opportunity. Often one CQI project can lead to another CQI project. As the institution begins working to improve one aspect of a process, it can reveal additional gaps to improve. Initial CQI cycles may be small and exploratory, leading to later cycles that are more sophisticated.

Quality metrics are widely used and have become essential for monitoring CQI. Data is regularly used to monitor, evaluate CQI, and report progress. If a facility/organization has an existing monitoring and evaluation platform, CQI can leverage that platform to use existing data and collect any new data needed for understanding improvement opportunities (see **section 4: step 4**, and **section 6**). If no such platform exists, independent monitoring activities can be conducted to monitor structural, process, and outcome improvements. The resulting data can be analyzed and used to generate improvements, which can then be implemented on a pilot basis, or on small scale. Successful improvements generated by the CQI program can then feed back into broader health programming to inform development of standards of service, frameworks, and guidelines.

CQI allows the facility/organization to rapidly identify and prioritize improvement opportunities; collect high-quality monitoring data that are fit-for-purpose; launch rapid improvement projects; and quantify their impact. CQI systematically harnesses the creativity and innovation of existing teams to define clear improvement goals, leverage appropriate monitoring data to identify opportunities, then implement and sustain rapid improvements in areas with the greatest impact. This process becomes an ongoing cycle, with teams identifying and tackling new improvement opportunities on a monthly basis or at an agreed timeframe.

Section 2

BACKGROUND AND INTRODUCTION

Ciheb (Center for International Health, Education, and Biosecurity)

Since 2006, the University of Maryland, Baltimore and Ciheb CQI approach has been used to improve health systems and guide healthcare providers, policymakers, and program planners in more than eight countries (Figure 1). Our CQI results have contributed to national strategic plans, partnership frameworks, improving service delivery, health system strengthening, and broadening of programmatic activities.

Figure 1: Map showing Ciheb-supported countries in Africa

In this resource guide we:

- Highlight CQI country approaches within our countries of focus.
- Provide evidence for building capacities of frontline health care providers; national and sub-national teams to implement CQI as a result of a collaborative efforts.
- Outline how to integrate technology into developing, implementing, and tracking CQI interventions.
- Provide examples of CQI solutions through a structured, indicator-based methodology for eliminating the HIV epidemic.

Section 3

CQI METHODOLOGIES AND APPROACHES

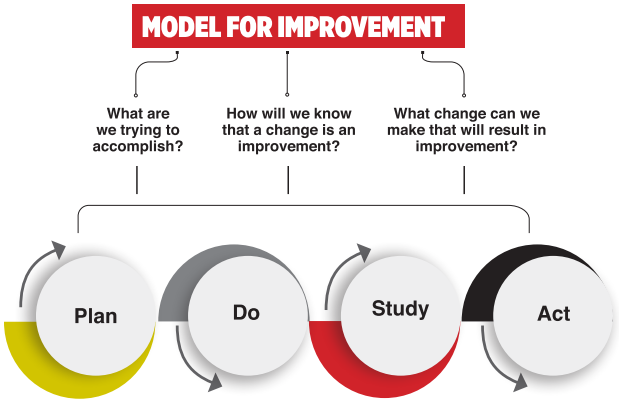
PLAN-DO-STUDY-ACT MODEL

Although the contexts of the improvement journeys in these countries may differ, one common theme is the use of the model for improvement developed by the Associates in Process Improvement. The model has two parts and three fundamental questions that CQI teams must address.

1. What are we trying to accomplish? Here the teams must identify a performance gap through a review of their data, or through observations, patient complaints, feedback from satisfaction surveys, etc.

2. How will we know that a change is an improvement? Here the teams must analyze the performance gap identified in question one. They will review their data and even collect additional data to make sure they know how long the problem has been in existence and what could possibly be causing it.

3. What change can the team make that will result in improvement? Here the team will develop a change package, which is a set of changes they believe if they implement will lead to an improvement. Plan-Do-Study-Act is a rehearsal for testing the changes in a real world setting by planning them, trying them on a small scale, observing the results, and acting on what is learned. This whole process describes the adaptive learning scientific method that Ciheb has adapted for action-oriented learning.

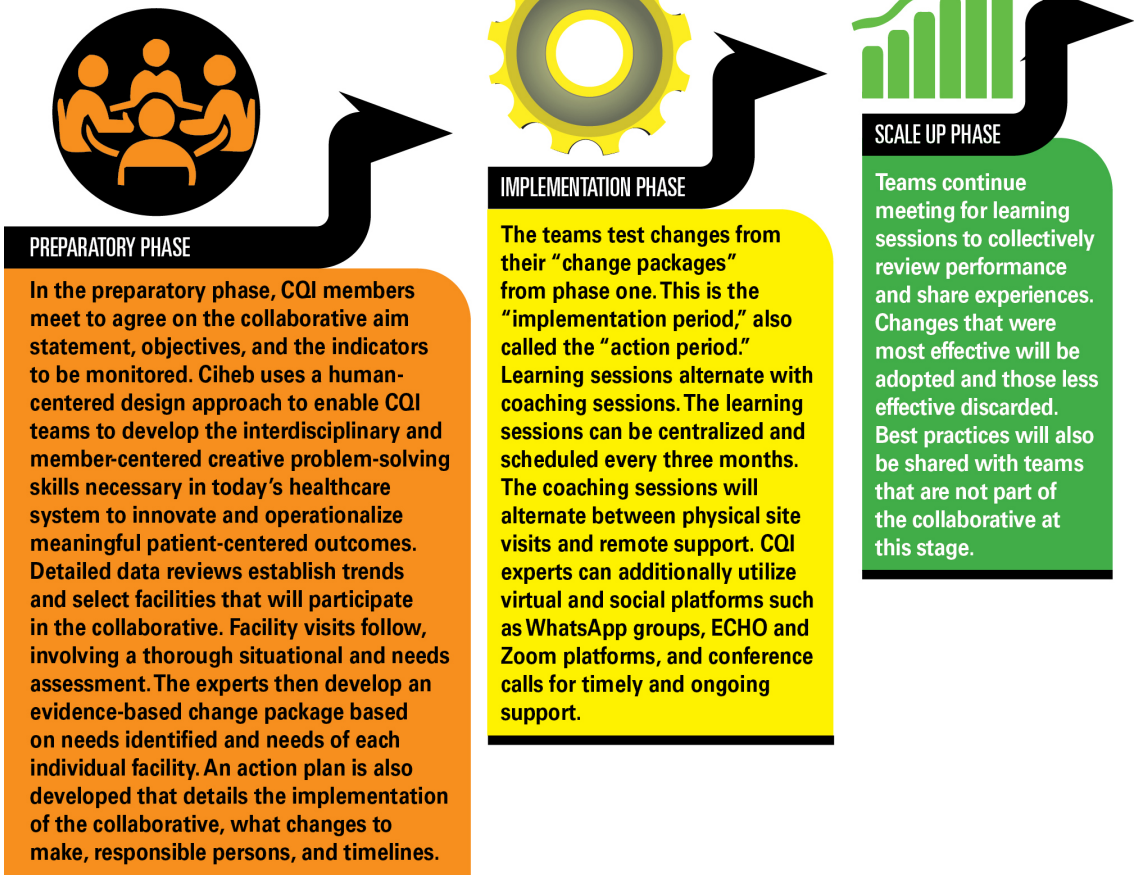


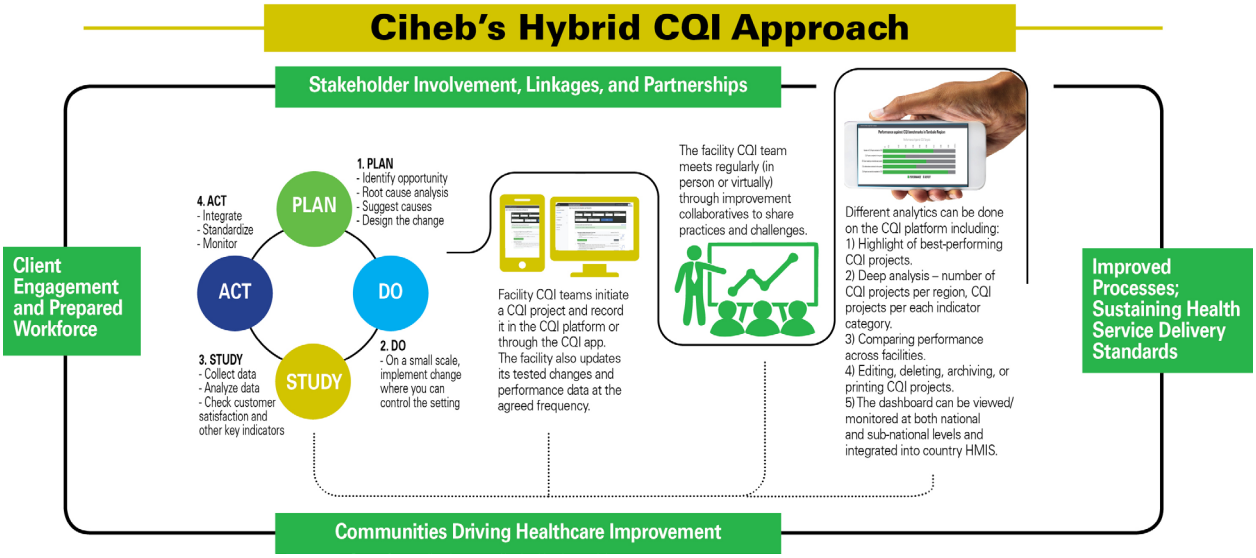
Section 3

CQI METHODOLOGIES AND APPROACHES

IMPROVEMENT COLLABORATIVE APPROACH

Another CQI approach Ciheb has commonly used is the improvement collaborative approach adapted from the Institute of Healthcare Improvement. This is a dynamic learning system where teams from different sites collaborate to share and rapidly scale up strategies for improving quality and efficiency of health services in a targeted technical area. As illustrated:





Section 3

CQI METHODOLOGIES AND APPROACHES

The resource guide represents the collective experience of CQI application in six developing countries between 2006 and 2020. We use different CQI approaches, mainly the Plan-Do-Study-Act and the improvement collaboratives for spread. Consistent data utilization and stakeholder engagement are emphasized throughout the application of the Ciheb CQI approach to ensure buy-in to the assessment, implementation process, monitoring of CQI initiatives, and sustainability for maintenance.

Our approach takes the following descriptive processes:

CONDUCTING A RAPID ASSESSMENT OF THE FACILITY THROUGH REVIEW OF DATA AND PROCESS MAPPING

- **Activity 1:** Engage leadership within an organization for support and buy-in.
- **Activity 2:** Conduct joint rapid assessment of services and review the findings.
- **Activity 3:** Identify a CQI team to drive CQI and planning processes.
- **Activity 4:** Developing CQI skills for the team.

IDENTIFICATION OF THE OPPORTUNITY FOR IMPROVEMENT

- **Activity 5:** Conduct a root cause analysis to identify the problem (e.g. fishbone diagram and five whys).
- **Activity 6:** Characterize and contextualize the gap using available data or proxy measures.

PLANNING AND PRIORITIZING

- **Activity 7:** Use priority methodology (e.g. QI prioritization matrix).
- **Activity 8:** Prioritize intervention depending on gap and other contextual factors to determine the change package.
- **Activity 9:** Identify the benchmark and indicator selected for improvement.

IMPLEMENTING CQI APPROACHES: MONITORING, COLLABORATIVE LEARNING, AND SCALE UP

- **Activity 10:** Record the CQI plan in the CQI digital app.
- **Activity 11:** Continuously monitor and update progress and challenges in the CQI digital app.
- **Activity 12:** CQI teams participate in regular (quarterly) peer-based learning forums — collaborative learning forums.

DISSEMINATION

- **Activity 13:** Identifying options for formally presenting CQI initiatives and the role of stakeholders in dissemination.

Section 4

A TOOLBOX FOR IMPLEMENTING CQI

In this section we share evidence-based resources from Ciheb to support the implementation of quality improvement projects. We also share valuable external resources that our teams have utilized for successful implementation of CQI. We begin with a how-to guide for quality improvement, which is an easy-to-read guide and provides examples and methods for administering quality improvement. We highlight tools based on the steps outlined in the previous section.

1

CONDUCTING A RAPID ASSESSMENT OF THE FACILITY THROUGH REVIEW OF DATA AND PROCESS MAPPING

- **Activity 1:** Engage leadership within an organization for support and buy-in.
- **Activity 2:** Conduct joint rapid assessment of services and review the findings.
- **Activity 3:** Identify a CQI team to drive CQI and planning processes.
- **Activity 4:** Developing CQI skills for the team.

Activity	Description of Tool	Attachment Link
1	QI plan template	CQI plan
2	CQI readiness CQI assessment tool	CQI site capacity assessment (SCA)
3	Initiating a QI team	QI team roles
4	CQI training slides	CQI training curriculum

2

IDENTIFICATION OF THE OPPORTUNITY FOR IMPROVEMENT

- **Activity 5:** Conduct a root cause analysis to identify the problem (e.g. fishbone diagram and five whys).
- **Activity 6:** Characterize and contextualize the gap using available data or proxy measures.

Activity	Description of Tool	Attachment Link
5	Completed fishbone diagram/ five whys	CQI tools
6	PDSA tool	CQI PDSA reporting tools

3

PLANNING AND PRIORITIZING

- **Activity 7:** Use priority methodology (e.g. QI prioritization matrix).
- **Activity8:** Prioritize intervention depending on gap and other contextual factors to determine the change package.
- **Activity 9:** Identify the benchmark and indicator selected for improvement.

Activity	Description of Tool	Attachment Link
7	Completed prioritization matrix	Prioritization matrix
8	Driver diagram	Driver diagram
9	QI indicator	Example of CQI indicators

4

IMPLEMENTING CQI APPROACHES; MONITORING, COLLABORATIVE LEARNING, AND SCALE UP

- **Activity 10:** Record the CQI plan in the CQI digital app.
- **Activity 11:** Continuously monitor and update progress and challenges in the CQI digital app.
- **Activity 12:** CQI teams participate in regular (quarterly) peer based learning forums — collaborative learning forums.

Activity	Description of Tool	Attachment Link
10	CQI app	Section 6
11	CQI app	Section 6
12	ECHO sessions and learning collaborative meetings	Section 4

5

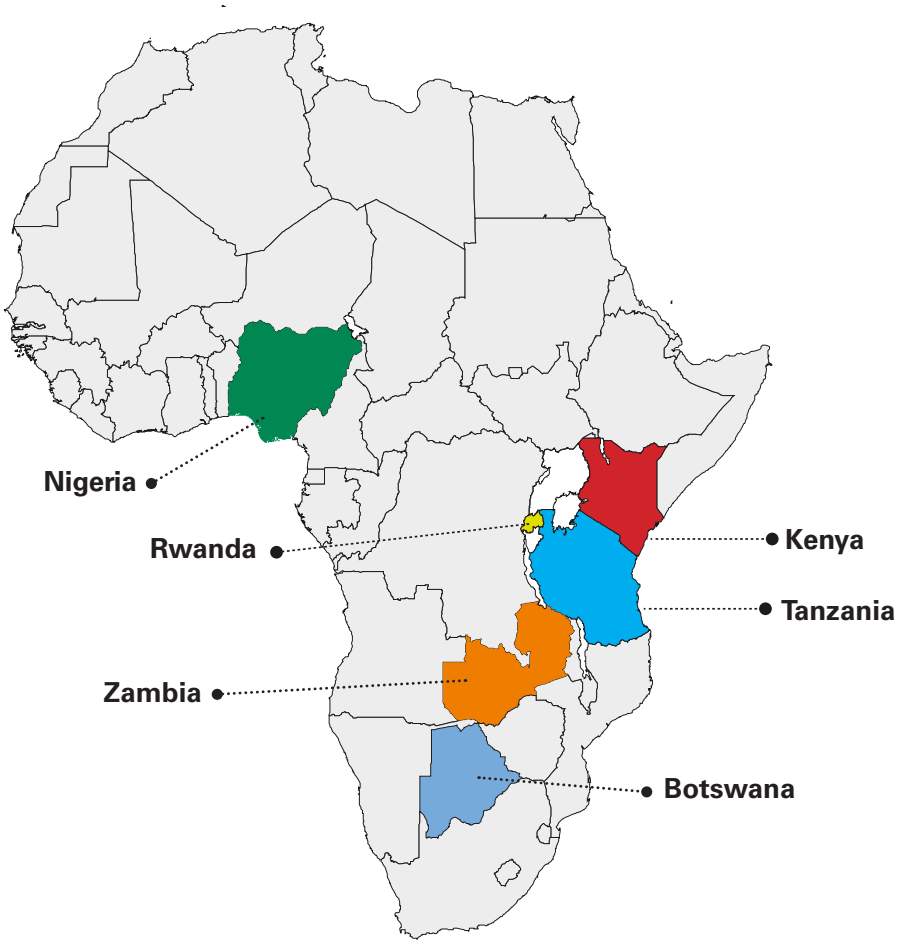
DISSEMINATION

- **Activity 13:** Identifying options for formally presenting CQI initiatives and the role of stakeholders in dissemination.

Activity	Description of Tool	Attachment Link
13	HSDA example: annual collaborative	Best practices and dissemination

Section 5

COUNTRY CASE STUDIES



The central innovation of the improvement collaborative is the structured shared learning among many teams working on the same problem area, thereby promoting rapid dissemination of successful practices and achievement of the given health targets within a short period of time.

Ciheb emphasizes sustainability through the development of government-level systems and processes essential to building a national quality management (or improvement) framework. Each country develops a team of leaders, who are trained and equipped to provide coaching and instruction to national and sub-national health teams. The collaboration between Ciheb and the Ministries of Health is designed to promote full country ownership and infuse a culture of CQI to build capacity at the local, regional, and national levels of care.

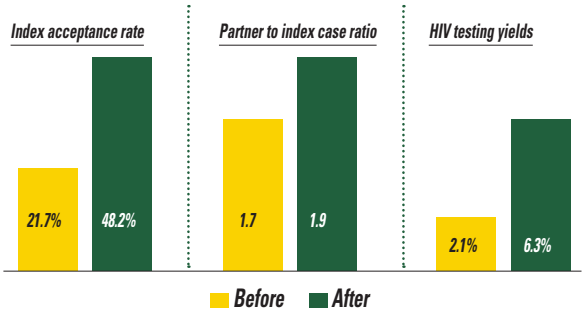
Our CQI approaches in each country are harmonized with the country guidelines and encourage the use of data to assess, measure, plan, and improve performance for all health sectors including HIV/AIDS care and treatment at all levels of the supported countries healthcare system.

In the next section, we highlight some case studies across six countries.

Section 5

COUNTRY CASE STUDIES

Rwanda:



Overview: Ciheb has been supporting Rwanda Biomedical Center's (RBC) HIV division in response to the needs for capacity building in CQI. As part of this support, Ciheb has integrated CQI into HIV clinical mentorship guidelines and standard operating procedures by integrating CQI HIV quality indicators to be reported by all district health facilities. In collaboration with the Centers for Disease Control and Prevention, Ministry of Health, and RBC, the team has showcased their efforts to establish CQI teams to drive improvement in Rwanda, specifically for increasing index HIV testing (see CQI example above).

Scope: Currently, 12 facilities have functional CQI teams and are implementing multiple improvement projects, and efforts are underway to ensure the sustainability of CQI initiatives. The focus of these efforts has been on supporting the RBC to scale up CQI activities across all high-volume sites, and to utilize the CQI digital app to monitor district hospital-based clinical mentorship indicators and ensure targets for mentorship and support are met.

CQI Approach: The methodology implemented for CQI in Rwanda includes initial site visits, mentorship and support, follow-up visits, and peer learning and experiential learning sessions.

Institutionalizing CQI Case Study from Rwanda: Use of CQI teams to increase index testing.

What was done: To improve uptake and yields in index testing, five facilities in Kigali were selected as pilot sites for intensive CQI. The Ciheb team, in conjunction with CDC, conducted site visits to identify on-site challenges to service uptake and assess capacity of health facilities to implement CQI. These facilities were supported to develop a functional quality improvement team that would identify gaps and implement CQI projects. The CQI team included the director of the health facility, ART clinic supervisor, ART nurses, VCT, PMTCT and ANC focal persons, social worker, data manager, and district nurse mentor. The CQI teams were trained on how to implement and sustain CQI activities, including structured root cause analysis and developing "Change Packages," using a priority matrix to identify solutions, and using data to measure progress. After initial training and continuous mentorship, the CQI teams developed CQI projects to respond to identified gaps across the index testing.

Index testing, also known as partner notification, is an effective case-finding strategy that targets the exposed contacts of HIV-positive persons for HIV-testing services. It is a voluntary process where counselors and/or healthcare workers ask index clients to list all of their sexual or injecting drug partners within the past year and their children.

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The index testing cascade is as follows: **1)** Number of eligible People living with HIV (PLHIV) offered index services; **2)** Proportion of index cases who accepted index testing service; **3)** Number of index case partners contacted and tested for HIV. The CQI team revised their change packages and adjusted work plans and indicator targets. Mentorship and support continued through phone calls. Intensive site-level monitoring and mentorship combined with improved CQI capacity at the site level led to improved index testing performance. The index acceptance rate increased from 21.7% to 48.2%, partner to index case ratio increased from 1.7 to 1.9, and HIV testing yields increased from 2.1% to 6.3%. Qualified and trained HIV counselors and dedicated index testing services staff were key towards the best practices. The next step includes scale up of this CQI model to the remaining 18 Kigali sites and providing continuous mentorships, on-the-job trainings, and holding regular data reviews, peer learning, and experience sharing.

CQI training for DH–based mentors in Rubavu District, Western Province, Rwanda in June 2018.

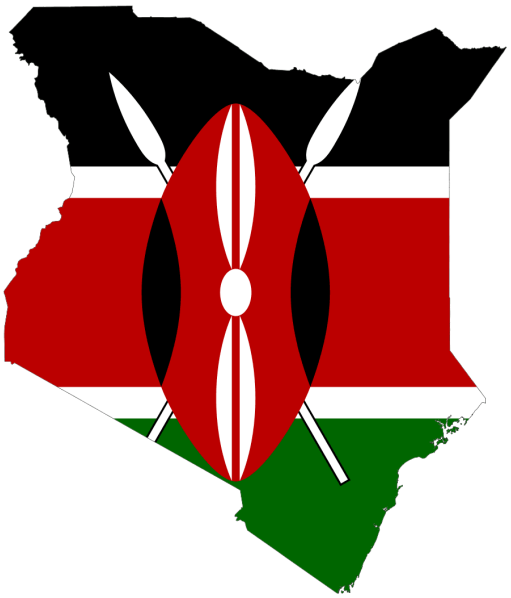
Group discussion during CQI training in June 2018 (Rubavu) to develop DH-specific CQI work plans.

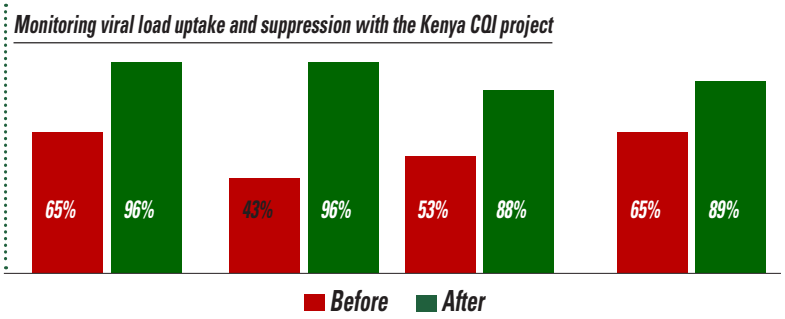
A group photo with the trainees after completion of the national CQI training of trainers in March 2015.

Section 5

COUNTRY CASE STUDIES

Kenya





Overview: UMB has been supporting HIV programs in Kenya since 2006. CQI has been a foundation to all pillars in HIV programing for UMB. As of 2020, Ciheb in Kenya has implemented several projects including two care and treatment programs in Kenya, one in Nairobi City County, an urban setting, and the other in two rural counties of Western Kenya, Kisii and Migori. These programs are known as Partnership for Advanced Care and Treatment (PACT) Endeleza and PACT Timiza, respectively.

Scope: PACT Endeleza and PACT Timiza work collaboratively with the national and county health management teams at the Ministry of Health (MOH) to train, provide mentorship, and support assessments to facilities implementing CQI. Training is provided for leadership (county health management teams) and other management staff working in the three supported counties. Focal persons (champions) for QI at the MOH are identified and appointed by the health directors of each county. Sub-county and facility-level QI champions are also identified. Ciheb supports the county health management teams (CHMTs) to oversee QI activities. As of May 2020, CQI is actively implemented in 49 health facilities in Nairobi City County and in 180 health facilities in Kisii and Migori counties, where 171 have functional CQI teams. Ciheb aims to institutionalize CQI across all the supported facilities.

CQI Approach: Ciheb in Kenya uses a national HIV QI framework, the Kenya HIV Quality Improvement Framework (KHQIF), for implementation. Ciheb led the development of these documents, leveraging their CQI field experience. Standard HIV indicators on key thematic areas are monitored and reported from the facility level to the sub-national and national units.

Examples of CQI projects include increasing isoniazid preventive therapy (IPT) for the prevention of tuberculosis and its documentation, ensuring baseline CD4 counts for new clients, viral load testing uptake, and viral load suppression monitoring across different populations, improving identification through index testing, linkage to ART, viral load turnaround time, prevention of mother to child transmission, early infant diagnosis, and key population (KP) retention.

Several quarterly learning sessions and semi-annual best practices meetings have been organized and conducted at the county level to assist staff directly involved in CQI. In addition, Ciheb in Kenya has managed to support the health service delivery awards (HSDAs) where CQI facility committees are nominated and recognized for their CQI performance.

Section 5

COUNTRY CASE STUDIES

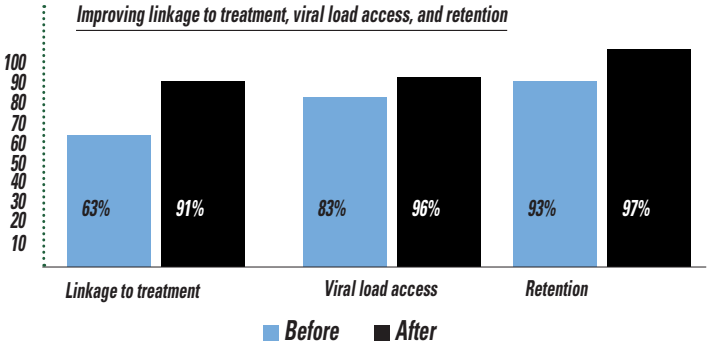
Institutionalizing CQI Case Study from Kenya: Use of CQI teams to increase viral load (VL) uptake and suppression.

What was done: CQI processes were used to improve uptake of viral load testing and monitor viral load suppression among pediatrics and adolescents. Numerous studies in Kenya report significantly poorer retention in care and viral suppression rates among pediatrics and adolescents compared to older adults leading to increased morbidity and mortality. Ciheb in Kenya reviewed their data and found that VL uptake and suppression were below the 95% and 90% thresholds for uptake and suppression, respectively. Ciheb used the pareto principle, where 20% of the facilities contribute to 80% of the gap. The facilities were identified to implement to improve VL uptake and suppression. The CQI initiative was proposed as a competition where facilities were working on a CQI challenge on VL uptake and suppression (12 facilities in Endeleza and 65 facilities in Timiza). Root cause analysis using fishbone diagrams was done to identify gaps, and prioritization of interventions was conducted. There was intense mentorship of healthcare workers on management of VL. Viremic clinics were established to ensure close monitoring of viremic clients and support groups for clients with viremia were set up. Clients were empowered in their involvement in care, specifically on the importance of self-monitoring of VL. We developed a simple viremic longitudinal register to document viremic clients, which would help weekly line listing and flagging of files of clients due for VL by use of colored stickers. We conducted case discussions with facility teams on management of VL. There was improved lab networking of VL testing and documentation of results. There was a marked improvement for VL uptake and suppression among pediatrics and adolescents. VL uptake improved from 65% (n=2777) to 96% (n=2761) in pediatrics and 43% (n=1813) to 96%(n=2664) in adolescents. Viral suppression improved from 53% (n=1813) to 88% (n=2664) in pediatrics and 65% (n=1947) to 89% (n=3520) in adolescents.

Section 5

COUNTRY CASE STUDIES

Botswana



Overview: UMB and the Botswana-University of Maryland School of Medicine Health Initiative (BUMMHI) were awarded a CDC-PEPFAR cooperative agreement in April 2015 to build the capacity of the Government of Botswana to train and mentor healthcare workers to reduce HIV-related morbidity and mortality, strengthen existing structures and systems to better address health workforce in-service training and clinical mentorship needs, and improve quality of HIV/AIDS service delivery. This is implemented through the Botswana Partnership for Advanced Clinical Education (BPACE).

Scope: BUMMHI supported the Ministry of Health and Wellness (MOHW) to finalize a quality improvement framework, curriculum, and standard CQI tool and templates. BUMMHI has trained over 700 healthcare providers from over 50 facilities throughout Botswana. Following training, each facility formed a CQI team that oversees implementation of QI in the facility including peer and cascaded training. In addition, each district has a CQI team that oversees CQI implementation by all facilities in the districts, and currently, district CQI teams are responsible for planning and hosting quarterly district learning collaborative meetings for cross-learning and sharing of good practices.

CQI Approach: BUMMHI works in collaboration with MOHW to support CQI implementation at 52 high-volume facilities within 12 districts to help the country reach epidemic control. Key activities include: **1)** Structured facility assessments using the site improvement through monitoring systems (SIMS) conducted every three months at each facility; **2)** CQI training (including development of QI curriculum and framework); **3)** CQI collaboratives that involve data demand and information use sessions; **4)** CQI continuous support through on-site support; and **5)** Continuous mentorship through the ECHO virtual platform.

Districts are supported to host and implement a district learning collaborative meeting to promote learning and sharing of best practices within the district. In addition, BUMMHI supported the Ministry of Health to host a national learning collaborative meeting where facilities and districts shared their good practices specifically on linkage of HIV-positive clients to treatment and viral load access by patients. Additionally, BUMMHI is working with MOHW to adapt the CQI digital app to support real-time documentation and monitoring of CQI projects. The adaptation process for Botswana will allow the CQI app to be directly linked to both DHIS2 data and facility assessment results (see **section 6**).

Institutionalizing CQI Case Study from Botswana: Use of CQI teams to improve linkage to treatment and access to viral load of HIV-positive clients on treatment.

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What was done: To increase linkage to treatment, viral load access, and retention of HIV-positive adults, data was reviewed for all the indicators, non-functional CQI teams were retrained, and all CQI processes were followed to identify challenges and develop corrective measures. Root cause analysis (brainstorming) using fishbone diagrams, prioritization of problems, and generation of ideas to correct the challenges were all done. For all the indicators, weekly data interrogation tools were developed to promote a culture of data use. This included "data walls," where facilities would post their CQI initiatives on their wall and track progress on a weekly basis.

Linkage to treatment: Relevant registers (Encounter, Pre-ART, and ART) and standard operating procedures (SOPs) were developed. Staff and QI teams were trained and mentored on implementation, utilization of lay health staff for less medical tasks, support of facilities to implement after hours, weekend, and on-call systems to ensure that all eligible clients were initiated on ART and continued to have access to services.

QI training of one of the district health management teams (DHMTs) by BUMMHI and MOHW.

Nurse prescriber & dispenser (NPD) from one of the clinics presenting on the progress on their CQI project.

District learning collaborative meeting, where facility QI teams share progress of their projects.

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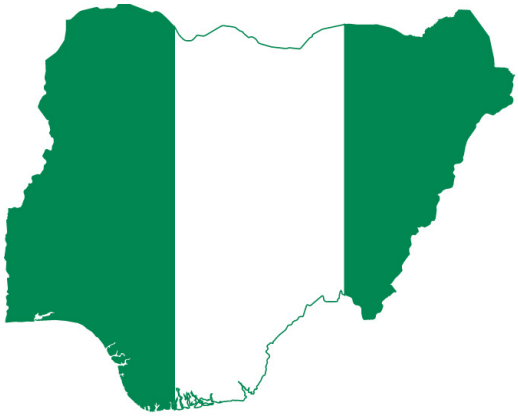
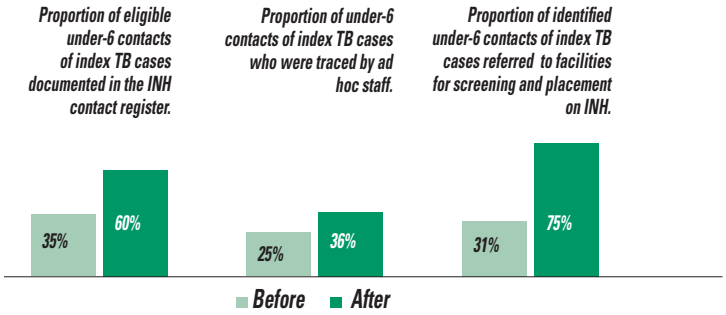
COUNTRY CASE STUDIES

Nigeria





Overview: Since 2006, UMB has supported the Government of Nigeria (GON) through different projects: **1)** NigeriaQual, a project designed to support the national HIV program in developing and standardizing quality improvement activities for HIV service delivery aligned with the HIVQUAL framework; **2)** NigeriaQual-TB is a project designed using the lessons learned from NigeriaQual that supports the national TB control program in CQI for TB care and treatment; **3)** Nigeria Data Repository (NDR)-Nigeria Medical Record System (NMRS) is a project that successfully integrated both PEPFAR and GON National HIV/AIDS monitoring and evaluating (M&E) activities in line with the "three ones" principles of M&E, thereby serving as a national data warehouse; and **4)** Human Resources for Health (HRH), a project aimed at optimizing HIV care providers' performance for service quality, and outcomes improvement by identifying human resources gaps and instituting quality improvement systems in 41 selected facilities in seven states targeted at improving retention in care, viral load, and early infant diagnosis (EID) uptake at each selected facility.

Scope: 1) NigeriaQual supports over 340 health facilities engaged to regularly measure their performance using the NigeriaQual HIV software; **2)** NigeriaQual-TB supports 72 TB treatment facilities in prioritizing key indicators for improving TB care and treatment; **3)** The NDR project has a national outlook where implementing partners report directly to the NDR platform, and data quality assessments and data quality improvement processes are done across all levels of the data system; **4)** HRH focused on 41 health facilities supported by the US CDC, USAID, and US Department of Defense. The objectives of the project were to: identify human resource and capacity gaps related to retention in care and treatment and uptake of VL and EID; and support a cadre of clinical support and quality enhancement staff to strengthen retention in care and treatment and increase uptake of VL and EID.

CQI Approach: Ciheb Nigeria uses different QI approaches based on the variation in the supported projects.

Institutionalizing CQI Case Study from Nigeria: Use of CQI teams to improve tracking, screening, and isoniazid (INH) uptake among under 6-year-old contacts of index TB cases in Kano State.

What was done: In September 2019, six selected facilities offering TB services were underperforming in provision of TB services. Across all facilities, it was identified that a significant number of under 6-year-old contacts of index TB cases were not screened, not optimally tracked, identified, and placed on INH, an antibiotic used for the treatment of TB. Index contact tracking and screening for infected TB patients were sporadically done. After conducting a root cause analysis, different reasons were identified: **1)** Poor reporting and documentation of index and contact; **2)** Treatment refusal by the parents of under-6 contacts; and **3)** TB directly observed therapy (DOT) officers lacked understanding of the TB algorithm. The TB state ministry of health teams, alongside the Ciheb team and the facility leadership, agreed to undertake a four-month CQI intervention to improve the quality of services rendered. The six facilities comprised of two tertiary institutions and four secondary institutions.

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To adequately address the identified gaps, a root cause analysis was conducted, and a prioritization matrix was utilized. The outcome was: **1)** An advocacy meeting was held with the facility management on the need to provide optimal services to under-6 contacts of TB clients; **2)** Community health persons were enlisted and tasked with contact tracing and ensuring active follow of index contact for screening and placement on INH; and **3)** DOT officers provided monthly supportive supervisory visits, ensured proper documentation, and held regular review meetings to monitor the progress of each facility. From these interventions, families of infected patients accessing TB care and treatment at the facilities were followed up for index client tracing. All children under 6 years old were promptly identified, and parents/guardians were duly counseled on the need to ensure that children/wards were promptly tested for TB and started on INH treatment. Within three months of commencing the QI intervention, records showed improved documentation, counseling, and turn out of under 6-year-old contacts of TB clients accessing treatment at the facilities. From a baseline of 31%, the hospitals recorded over 30% improvement in the documentation of eligible under-6 contacts who were tracked, screened, and started on INH treatment.

Annual NigeriaQual HIV award forum where awards were given for the best-performing facilities and states ministries of health in QI implementation.

A brain storming session at the NigeriaQual TB stakeholders meeting.

Imo STBLCPO, IHVN rep, State M&E, DOTS officers, Rep. of NTBLCP and UMB teams at GH Awomama, Imo State, Southeast, Nigeria.

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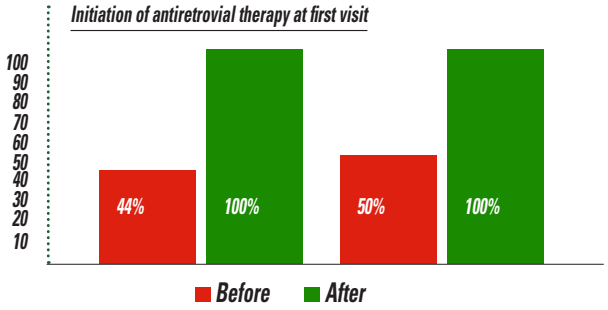
Zambia



Overview: UMB has been supporting HIV services in Zambia since 2005. Ciheb Zambia currently provides services under two community programs, Zambia Community HIV Epidemic Control for Key Populations (Z-CHECK) and Community Impact to Reach Key and Underserved Individuals for Treatment and Support (CIRKUITS) and one care and treatment program, Stop Mother And Child HIV Transmission (SMACHT).

Scope: The programs operate in four of the 10 provinces of Zambia. Ciheb has, through the years, been involved in the implementation of CQI activities not only at the facility level, but also through participation in the national technical working group activities. The scope has included healthcare worker training and mentorship in the CQI approaches and CQI project implementation towards improving program performance.

CQI Approach: Zambia has adopted the Performance Improvement Approach (PIA) as a key strategy and has a national guideline on QI for healthcare providers including a standard training package. There are standard QI tools in use including project implementation plans facilitating the documentation of the QI project implementation plan and follow up. Ciheb Zambia utilizes the recommended national approach and tools in the implementation of QI projects but with a recent move to the adoption and use of the Ciheb-developed electronic reporting platform which is described in more detail in the next section.

Institutionalizing CQI Case Study from Zambia: Ciheb reviewed the data on initiation of pregnant women on ART at the first visit. Two facilities in the Southern Province were lagging behind in the goal of having all pregnant women initiated on ART. Root cause analyses were conducted for the design of CQI interventions. The first facility had a 44% rate of initiation. Through root cause analysis, it was identified that patient refusal to start ART and inadequate staff during clinic times were major barriers. Their change package patients were sensitized on ART and basic HIV knowledge, and there was a reassignment of staff during clinic days. The second clinic had a treatment initiation rate of 50% at baseline. The gaps identified included few staff trained on ART and lack of orientation on national guidelines. The change package included onsite cross training on ART initiation, and Ciheb ensured there was availability of national guidelines at the facility. Above is an illustration of the before and after in three months.

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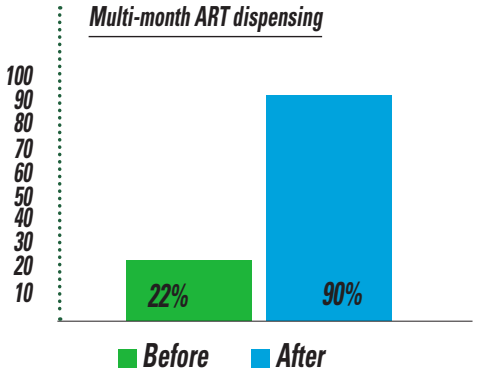
Tanzania



Overview: UMB has been operating in Tanzania since 2006 implementing multiple projects. As of 2020, Ciheb Tanzania has two projects in the country, one of them being the Reaching, Engaging, and Acting for Health (REACH) project. Through this project, Ciheb oversees a mentorship program for implementing partners, regional and council management teams, and healthcare workers in 10 regions to strengthen models for improvement and implement CQI activities across the continuum. Ciheb works directly with the regional teams in identifying specific local partners or regional health management team challenges affecting QI targets and plan improvements. This is done by directly supporting site-level QI activities, improvement collaboratives involving up to 160 facilities, and using the ECHO virtual platform for ongoing sharing and learning from peers.

Scope: Since 2016, Ciheb has directly provided QI support to 273 facilities, 10 regional management teams, and up to 80 council health management teams. Through the REACH project, Ciheb has also conducted more than 50 CQI trainings reaching more than 500 healthcare workers. Ciheb is also represented in the national QI technical working group and the national HIV QI technical working group, which has, since 2016, revised the national HIV QI guidelines and the QI training package, developed a community QI guideline and its training package, and is currently reviewing the national supportive supervision guidelines and many others. Ciheb also works very closely with CDC through its regional teams, local implementing partners, and regional and council health management teams through targeted collaborative site-level mentorship and supportive supervision.

CQI Approach: Ciheb's CQI approach is four-pronged, as shown in the diagram. QI support is driven by the consistent use of data from multiple sources, ongoing QI assessments, capacity building, and collaborative learning.

Institutionalizing CQI: Since the introduction of differentiated service delivery models in Tanzania in 2016, there has been a slow pace in picking up multi-month dispensing (MMD) in most of facilities.

What was done: A facility in one of Ciheb's supported regions realized that their MMD rate was below the national target of 65%. Upon conducting a root cause analysis using a fishbone diagram, they realized that the healthcare workers lacked knowledge on MMD requirements and criteria. In addition, clients were also not aware of the benefits of MMD and whether that was an option in the first place. There was a long turnaround time for HIV viral load results that were used for client categorization, and in general, there was no system in place to check for eligibility of MMD among the clients. The team identified the quick win interventions using a priority matrix and quickly modified the client flow to allow for two checkpoints. Clients eligible for MMD were identified at the triage desk, and at the exit desk,

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those who were missed were identified and returned to clinicians and pharmacy for scripting and dispensing, respectively. The QI team further used checklists and yellow stickers to mark patient files. Ciheb provided mentorship to the healthcare workers who then provided client education during health talks. Performance data was reviewed weekly. As a balancing indicator, the team ensured they consistently had enough drugs in stock through timely monitoring, quantification, and forecasting. Through these interventions, the team managed to improve MMD from an average of 22% between January–July 2019 to an average of 90% between August 2019–April 2020.

Section 6

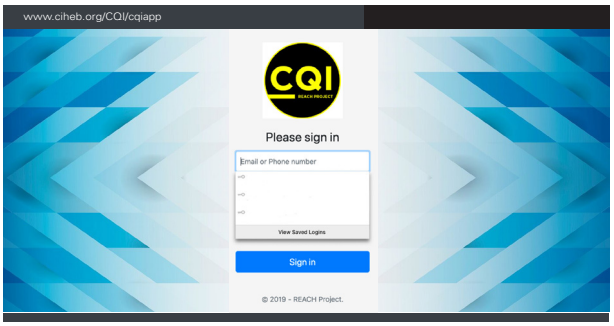
DIGITAL TRACKING OF CQI PROJECTS

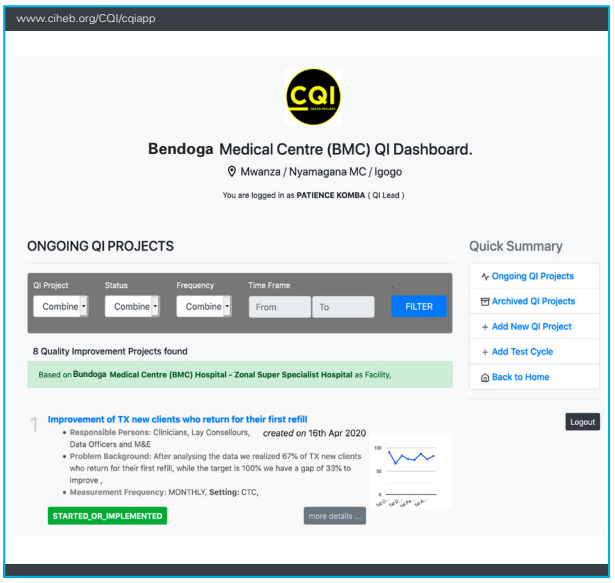
Ciheb uses an evidence-driven hybrid approach to achieve client outcomes. Our approach integrates technology for easy and seamless implementation of CQI projects. Ciheb has adapted technology for CQI through simple charting to more advanced decision support and integration to improve real-time tracking. The use of technology presents numerous opportunities for improving and transforming healthcare, including: reducing human errors in recording CQI projects, reducing time used in entering data from paper-based templates, improving clinical outcomes through real-time tracking, facilitating health coordination at the facility, sub-national and national levels, improving practice efficiencies, and real-time tracking and archiving data over time.

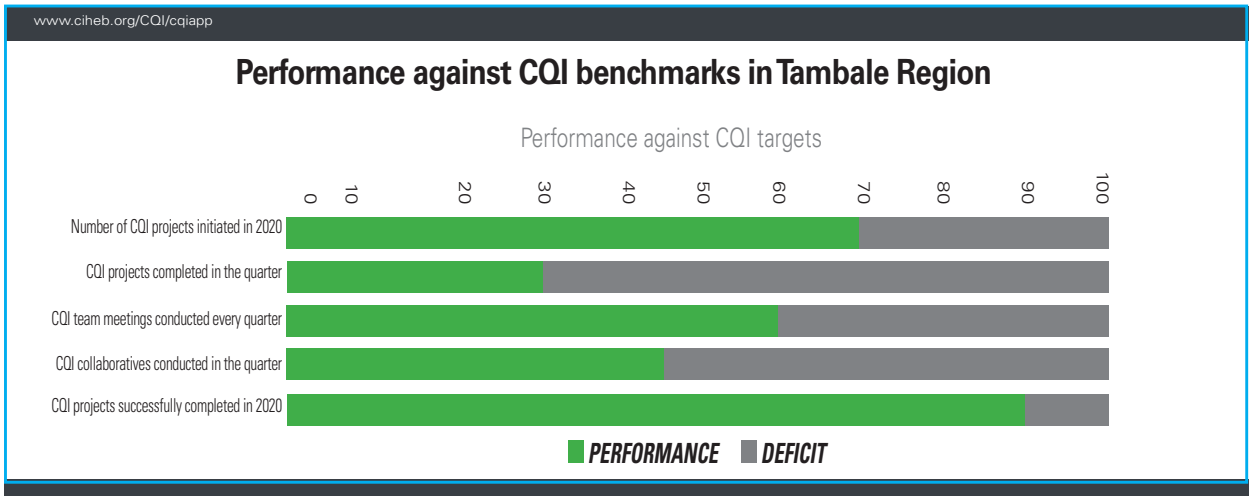
The Ciheb CQI approach is attained through enhanced client engagement focused on patient-centered care and a prepared workforce who are trained and mentored in CQI methodology. Our approach relies on communities driving healthcare improvements with an emphasis on institutionalization of CQI. Our CQI approach is meant to drive improved processes and increase service delivery standards while leveraging partnerships with public and private stakeholders to expand CQI.

We leverage the success of our innovative CQI digital platform for implementing CQI approaches: monitoring, collaborative learning, and scale-up. This CQI platform allows for electronic reporting of CQI using an Android mobile application and the CQI web dashboard in Tanzania, which has helped the real-time tracking and documentation of over 800 CQI projects.

The tool was developed through the Reaching Engaging and Acting for Health (REACH) project, which is funded by the CDC in Tanzania (project period: 2016-2021). The CQI platform is currently being integrated into tracking QI projects for clinical HIV/TB pathways and provides users (CQI teams) real-time tracking data of CQI projects, such that CQI teams can better self-manage their own CQI. The app has now been adopted in Kenya, Rwanda, and Zambia. Healthcare leaders at the national and sub-national level can use the CQI app as well to track and monitor the CQI projects and provide feedback to facilities. In the platform's initial design phase, we undertook a co-design process among potential users of the QI platform. We then revised the QI platform using Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines intended for reports that describe systematic work to improve the quality, safety, and value of healthcare, using a range of methods to establish the association between observed outcomes and intervention(s).





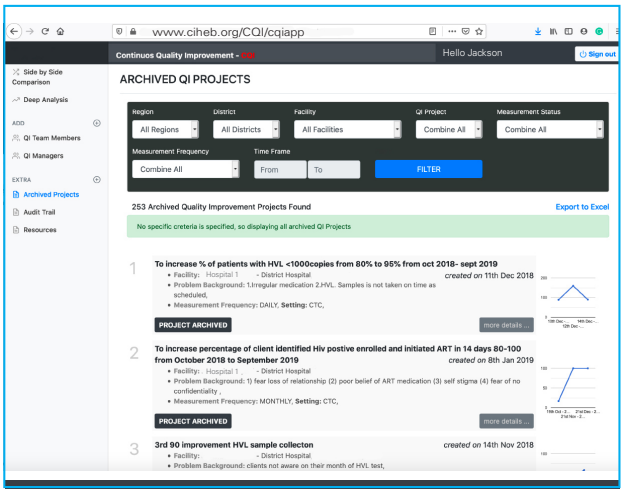


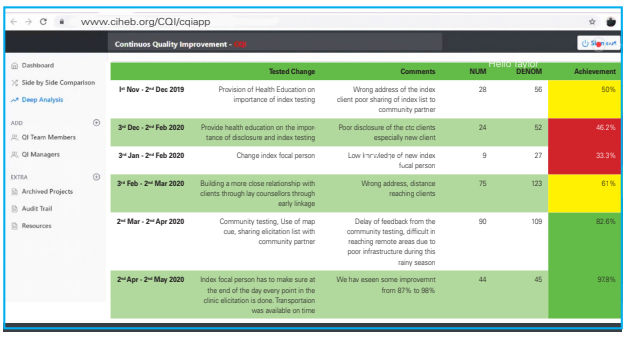
Section 6

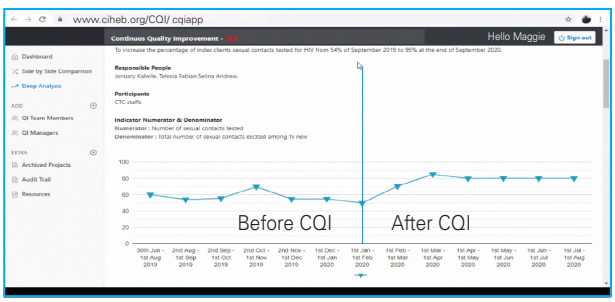
DIGITAL TRACKING OF CQI PROJECTS

The SQUIRE guidelines apply to the reporting of qualitative and quantitative evaluations of the nature and impact of interventions intended to improve healthcare, with the understanding that the guidelines may be adapted as needed for specific situations. The results from this process are presented in this section and have informed the technology development. Further research is currently being carried out, as the platform is implemented, to investigate how it directly reconfigures practices of HIV.

Utility: The CQI digital platform was developed by involving potential end users of the data in the design of the framework to ensure its future usefulness and ease of use with online and offline capabilities. This platform allows the users to document the step-by-step process of CQI implementation including defining the problem, problem analysis, change package (herein called the small tests of change) that follows the PDSA cycle, indicators definitions, source of data, and output/outcomes. The tool can also be easily adapted to any performance measurement system beyond HIV with other policy priorities and exigencies for the country. This tool also has a dynamic web dashboard.







System architecture: The CQI reporting app comes in the form of an Android mobile app and a web dashboard. The mobile app is for use in places where the users have no or limited access to a computer with internet connectivity. The web dashboard has more interactive features for both facility users and above-facility users.

Brief description of use: The CQI digital platform can be used at the individual facility level, council or regional level for CQI activities targeting multiple facilities, and at the regional, provincial, or county level for CQI projects targeting multiple districts, counties, or councils. All of these levels will have CQI teams that normally oversee CQI implementation. They will be using their routine data to identify process or system gaps that need CQI interventions. Other CQI tools will be used to understand the CQI problem, perform a root cause analysis, and prioritize interventions.

This process will then be captured in the CQI digital platform for monitoring of performance improvement over time. The CQI app captures the problem background, objective of the CQI initiative, responsible person(s) to oversee the CQI initiative and the improvement team involved, indicator definitions, and data sources. Using CQI tools, every month the team will identify changes they want to test for improvement using the PDSA model. These will also be captured in the app. At the facility level, users can enter as many CQI initiatives as possible. Above-the-facility users of the digital platform can perform multiple tasks. They can view all the CQI activities in the districts or regions (sub-national level). They can compare performance across multiple facilities, and the dashboard can automatically detect the best-performing CQI initiatives as best practices, which can be used for peer learning.

The CQI digital platform has various additional benefits such as: **1)** A printing function that CQI facilities with a CQI display board ("talking walls") or a paper-based QI report submission requirement will find quite useful; **2)** CQI projects deleted or archived can also be retrieved at any time; **3)** The web dashboard also hosts a resource tab that has several CQI resources for reference or further learning; **4)** Anecdotal feedback from users indicates the CQI digital platform has reduced the amount of time taken for recording CQI initiatives; and **5)** The automation of displays such as trend graphs, raster charts, and bar graphs help visualize the progress or challenges at a click of a button.

Section 7
INTERVENTION PACKAGES

CQI APPROACHES TOWARD MEETING THE 95-95-95 TARGETS FOR EPIDEMIC CONTROL

POPULATION	AGE CATEGORY	IDENTIFICATION	LINKAGE	VIRAL LOAD SUPPRESSION	RETENTION
General Population 	Adults <24 years excluding pregnant and breast feeding mothers	**LRRR Principle** • **L**ine list all contacts not tested from family index testing and partner. • Notification service contacts. • Line listing all eligible contacts not tested. • **R**escreening contacts with high risk. *- Have high VL.* *- Newly enrolled with no elicited partner/ contact.* *- Have returned to care or transferred in.* *- Widows and widowers.* • **R**ebooking identified contacts for testing. • **R**ecord, review performance, and report. *- Completing assisted partner notification services (aPNS) network flows/trees.* • Connecting eligible contacts staying outside the catchment area to nearby facility for testing. • Weekly meetings with facility staff to assess progress. • Implementing collaborative QI projects on aPNS.	• Case management by HIV testers for 6-12 months—the HIV tester is assigned the HIV case for 6-12 months and supports them in navigating the health system. • Electronic HIV testing services modules (eHTS) to promote longitudinal tracking of all positive clients. • Define linkage with a confirmed client number for clients referred out of the testing facility. • Access to treatment through availability of 14-day starter packs of ART at multiple service delivery points. • Introduction of on-call clinicians after hours and on weekends to initiate HIV-positive clients identified. • Defined HIV testing services and clinician interphase, which includes escorting clients for enrollment. • Collaboration with community testing partners to build cascade from testing to treatment. • Implement differentiated service delivery options to clients to complement human resource capacity. • Capacitating and empowering facility nurse prescribers and dispensers to be champions for fast tracking clients to ART. • Deployment of expert clients to support initiation through psychological preparation of a newly diagnosed client by sharing personal experiences on living healthy on ART. •Use of QI performance dashboards to identify best practices, share in a collaborative, and reward top-performing teams. •Use of peer educators (expert clients) to escort clients at each service delivery point. •Sameday home visits by community health volunteers or case managers for clients who give consent.	• Weekly profiling of high VL clients and prioritizing for case management. • Conduct monthly data reviews at the facility to identify at-risk patients for immediate follow up. • Utilize M-lab to enhance timely results and follow up including those with high VL. • Facility viral load champions to track viral load results and flag viremia clients. • Implement prompt and complete documentation of the standard viremia register. • Implementation of viremia clinics to manage and expedite cases. • Implement a viremia register to document all viremic clients and provide structured follow-up processes. •Identify lessons learned in viremia management for cross-sharing during improvement collaboratives. •Use patient line data to profile and categorize clients with unique characteristics (e.g. clients with substance abuse, clients with non-communicable diseases).	• Implementation of a real-time appointment system and follow-up system. • Fidelity to appointment management processes/standard operating procedures. • Implementation of "return to care package" that includes analysis of barriers from the client; counseling on identified barriers; support group enrollment and management; updating of client contact information; identification of treatment buddy/supporter; and identification of case manager . • Welcome back messages for clients that miss appointments. • Use WhatsApp/social group discussions to enhance retention. • Identify retention champions at the facility level. • Implement differentiated care service delivery approaches and multi-month dispensing (MMD). *- Community adherence groups.* *- Urban Adherence Groups.* *- Health post/fast truck dispensation.* • Flexi clinics for clients with special needs or considerations. • Text for adherence messages as reminders. • Categorization of new clients for treatment literacy sessions and use of treatment literacy checklist. • Adoption and use of appointment management checklist at facility level. • Integration of opportunistic infection/chronic illnesses clinic with HIV treatment appointment schedule. • Weekly data reviews on performance indicators, specifically on retention.

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CQI APPROACHES TOWARD MEETING THE 95-95-95 TARGETS FOR EPIDEMIC CONTROL

POPULATION	AGE CATEGORY	IDENTIFICATION	LINKAGE	VIRAL LOAD SUPPRESSION	RETENTION
Special Considerations to Key and Priority Population (same strategies above apply)					
Children 	0-10 Years	• Family-based testing/ family index testing (FIT). • Mobile and electronic tracking platforms (linked to early infant diagnosis (EID) testing). • Enhancing mother-infant paired services (tracking for missed appointments or loss-to-follow-up). • Implementing point of care (POC) technologies for EID. • Facility-based testing of children (tuberculosis, nutrition, outpatient, and inpatient).	• Mentor mothers to ensure linkage. • Case managers ensure pediatric regimen is prescribed based on body weight. • Reviews of counselor performance. • Accounting for all HIV-positive children. • Follow-up of positives for 6-12 months by the tester.	• POC technologies for viral load. • Real-time monitoring of viral load. • Surrogate caregivers. • Family-centered care approaches with family visits encouraged and scheduled. • Dose monitoring with weight. • Profiling of children with high viral load. • ART optimization (acceleration and monitoring of all children). • Differentiated care through set up of viremia clinics. • Enhanced treatment adherence counseling and literacy classes for caregivers of viremic clients.	• Real-time appointment system. • Follow-up of missed appointments from the first day appointment is missed. • Obtaining more than one contact for follow-up. • Assignment to a case manager. • Updating of client caregiver status and contacts during every visit. • Flexi clinics for PAMA care. • Collaboration with OVC partners to address socioeconomic barriers. • Identify surrogate care givers to the children. These are clients who come from the same village/ community as the child who is orphaned and are not relatives. They also take treatment from the facility and are willing to support the child to be virally suppressed and retained in care.
Adolescents 	10-19 Years	• Social network testing of all adolescent contacts and their networks. • Risk screening at the community level. • Operation Triple Zero (OTZ) for adolescents. • aPNS for newly enrolled adolescents. • Use of adolescent testers.	• Adolescent peer support programs. • Digital social network support. • Case management by an adolescent peer.	• Adolescent friendly services. • Adolescent peer support programs. • Mobile phone case monitoring of adolescents. • Monitoring Operation Triple Zero to achieve viral suppression. • Adolescent viral load champions. • Profiling of adolescents with high viral load. • Holiday fun days.	• Age-specific appointment systems. • Holistic approach to adolescent health (integrating mental health, substance use, etc.). • Barrier analysis/risk assessment for poor adherence at each visit. • When possible, provision of economic incentives. • Digital/online social network support. • Aligning clinic appointments to academic schedules. • Adolescent suggestion box (free area). • Scholars' model—adolescents on ART who are in boarding schools are dispensed with three months' supply of drugs, which are kept by their preferred school administration personnel in schools.

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INTERVENTION PACKAGES

CQI APPROACHES TOWARD MEETING THE 95-95-95 TARGETS FOR EPIDEMIC CONTROL

POPULATION	AGE CATEGORY	IDENTIFICATION	LINKAGE	VIRAL LOAD SUPPRESSION	RETENTION
Youth 	20-24 years	• Engage screeners with HTS background to do risk screening with aPNS. • Enhance comprehensive prevention services, or PrEP.	• Case management from identification.	• Adopt a peer system by attaching each youth to a peer (can be a patient or a healthcare provider). • Illustrative literacy materials. • Social sharing platforms. • Youth-friendly services including transition/ reproductive health illustrative sessions.	• Flexi clinics. • Fun and social days. • Online support groups • Income generating activities. • Routine attrition audits and identifying root causes with multi-disciplinary teams. • Scholars' model (see adolescents).
Pregnant and breast-feeding women 		• Work with community partners including community health workers to support early pregnancy identification and antenatal attendance. • Attach an HIV testing counselor to each antenatal clinic (ANC). • Capacity building of ANC nurses on aPNS. • Adoption of geo-mapping of coverage across regions and real-time tracking of mother to child infections. • Involve men and identify male champions to support the engagement of pregnant women in services.	• 100% same-day enrollment. • Initiate treatment preparation education at pre-test counseling. • Case management with mentor mothers. • Enhance longitudinal tracking of mother to infant pairs. • Account for all non-linked mothers and ensure linkage and proper documentation.	• Case management. • Identification of high risk mothers (e.g. new) and defining a package of care (high-risk clinics).	• In areas with high infection rates, use mentor mothers, community health volunteers, or case managers to conduct baseline home visits. • Family centered care. • Maternal cohort analysis. • Real-time lost to follow up (LTFU) audit.
Key populations including female sex workers, men who have sex with men, and people who inject drugs 		• Utilize individual social networks to enhance testing. • Incentivized strategies including redeemable coupons. • Male involvement in healthcare and enhancing male health seeking behavior through use of other male experienced clients. • Identify areas of convening and use them as hotspots for testing. • Enhance comprehensive prevention services, or PrEP.	• Sensitization of healthcare providers on integrated services. • Peer case management approach.	• Integrated services. • Collaboration with other treatment partners for follow up.	• Optimal use of peer calendars and joint monthly planning. • Retrieval of appointments scheduled folders a day prior. • Fidelity to use appointment diaries and quarterly audits on completeness of the appointment diary.

Section 7
INTERVENTION PACKAGES

CQI APPROACHES DURING A PANDEMIC (e.g. COVID-19)

POPULATION	AGE CATEGORY	IDENTIFICATION	LINKAGE	VIRAL LOAD SUPPRESSION	RETENTION
General Population 	Adults <24 years, excluding pregnant and breastfeeding mothers	• Use of HIV self-testing kits for sexual partners of index clients who are willing. • Setting aside an assisted self-testing center/site within the facility so that positive clients can be confirmed immediately for enrollment.	• Same-day enrollment to ART. • Weekly follow up through phone calls for any side effects. • Documenting non-linkage reasons due to COVID-19 to enable targeted strategies and mapping of these clients for interfacility linkage. • Defined patient flow for linkage of new clients to minimize missed opportunities. • Updating facility directory to confirm interfaculty linkage to treatment.	• Six-month VL access changed to annual VL access for stable HIV-positive clients on ART to decongest the facilities. • Weekly case discussions through ECHO/Zoom platforms for optimal interventions for clients with detectable VL. • Monthly treatment literacy messaging and enhanced adherence counseling through telecommunication. • Conducting enhanced adherence sessions through phone.	• MMD of >3 months depending on availability of ART regardless of patient type. • Telephone follow up of clients missing refill appointments. • Pre-calling of clients a day before appointment to remind and inform clients of time to visit. • Client-centered booking based on convenient time of the day. • Pre-packing of client drugs to minimize patient contact within a facility. • Use of social platforms to reassure clients of continuity of care in cases of facilities with identified COVID-19 cases. • Scale-up of community ART distribution groups (community health worker-led). • Integrate services for clients with multiple commodities to minimize clinic visits that may lead to missed appointments. • Real-time transfer out/loss to follow-up audits to profile clients affected by COVID-19 government guidelines. • Enhance use of data to inform decisions on a weekly basis. • Update client locator information to enhance client-to-client distribution. • Use of courier services to reach clients in lockdown regions. • Documentation of facility phone in patient appointment card for ease of contacting.
Children 	0-9 years	• Inviting clients to appropriate times and days for testing in the facility. • Optimizing family index testing.	• All HIV-positive clients were initiated on treatment same day (as per guidelines).	• Six-month VL access changed to annual VL access for stable HIV-positive clients on ART to decongest the facilities.	• MMD of >3 months depending on availability of ART regardless of patient type. • Telephone follow up of clients missing refill appointments.
Adolescents and Youth 	10-24 years	• Implementing social network strategies and distribution of HIV self-test kits. • Incorporating HIV testing messages into COVID-19 messages on youth social platforms.	• Same day ART initiation and multi-month dispensing for new clients with phone follow up in the first week for those who consent. • Identification of more than one treatment buddy including a social friend who they are willing to disclose.	• Cross-pollination of best practices. • Monthly adherence sessions through phone. • Assigning case managers who are peers.	• Adolescent clubs in smaller groups outside the facility with integrated services including COVID-19 sensitization sessions and dancing clubs. • Adherence sessions and discussions on adolescent-only social media platforms.
Pregnant and breastfeeding women		• Community mapping of low coverage areas and review of weekly community reports to incorporate testing messages and COVID-19 sensitization.	• Same-day ART initiation.	• Profiling high-risk pregnant and breastfeeding mothers for community dispensing and support groups with a minimum of 15 clients.	• Multi-month dispensing.

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