



**UNIVERSITY OF NAIROBI COLLEGE OF HEALTH SCIENCES.
INSTITUTE OF TROPICAL AND INFECTIOUS DISEASES.**

UON HIV CAPACITY BUILDING FELLOWSHIP PROJECT REPORT.

**PROJECT TITLE: A WEB BASED ROUTINE DATA QUALITY
ASSESSMENT (RDQA) TOOL FOR UPSCALLING HIV DATA AUDIT
AND MANAGEMENT FOR SIAYA COUNTY HEALTH FACILITIES.**

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A Dissertation Submitted in Partial Fulfillment for the Award of Fellowship
in Capacity Building for Sustainable Development (Health Informatics
Track) of the University of Nairobi.

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DECLARATION

I **Okoth George Odhiambo** do declare that this project report is original and has not been published or submitted to any other University or research institution.

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DEDICATION

I dedicate this report to my family members and in a special way to any child under age of five years who is HIV positive.

ACKNOWLEDGEMENTS

I wish to acknowledge the unreserved contribution of several individuals and institutions and all key stakeholders who played significant role towards success of this project:

First, I wish to express my gratitude to my supervisor **Dr. Samuel Ruhiu(PhD)** and Mentor **James Odiga** for their guidance and support during the entire program period. Their encouragement kept me going even when situations seemed not to work to my advantage. Again, my sincere thanks go to the University of Nairobi, Institute of Tropical and Infectious Diseases (UNITID), Management Science for Health (MSH) and the Centers for Diseases Control and Prevention and (CDC) for financial support and capacity building through University of Nairobi and University of Washington. In addition, I wish to thank in a special way the entire management of Siaya County Health Department (SCHD) for providing me with an opportunity to learn and implement the project in their esteemed institution.

Lastly, I tender appreciation to my wife and children, for their understanding that fellowship period is a demanding one and for providing that propelling atmosphere to complete my project.

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LIST OF ABBREVIATIONS

ADT	Anti-Retroviral Dispensing Tool
AMPATH	Academic Model Providing Access to Healthcare
ART	Anti-Retroviral Therapy
SCRH	Siaya County Referral Hospital
CCC	Comprehensive Care Clinic
HCT	HIV counseling and testing
HIS	Health Information System
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
LTF	Lost to Follow up
KAIS	Kenya AIDS Indicator Survey
MCH	Maternal and Child Care
PLWHA	People living with HIV and AIDS
PMTCT	Preventing Mother-to-Child Transmission
SDLC	System Development Life Cycle
TB	Tuberculosis
UON	University of Nairobi
UNITID	University of Nairobi Institute of Tropical and infectious Disease
WHO	World Health Organization
CHMT	County Health Management Team
SHMT	Sub-county Health Management Team

1.0 ABSTRACT

The project provides for an enhanced user oriented Random Data Quality Assurance (RDQA) tool. It is an evaluation tool used in system strengthening and determining country data quality issues that needs analysis and assessment at each level of health system governance. Its aim is to encourage and support implementation of the County EMR in order to ensure good, robust and reliable quality health data are produced from the health facilities. The tool is intended to be updated and used periodically by all to verify the quality of data and employ interventions to correct existing procedures and practices that would lead to good data quality.

1.1 BACKGROUND INFORMATION

Siaya County is committed to the Global Health Data Collaborative (HDC) (joint effort by county health development partners, civil society and academia to improve the quality of health data). Through this collective action to maximize the impact of respective investments in country health information systems among others there is Shift from program specific investments in information and reporting to county reporting and demand creation for data by showcasing what available data can do. One key result area of this project proposal is to promote IT Supported Quality and Process Management. Under this result area the project is supporting quality initiatives including the generation and use of evidence.

1.2 INTRODUCTION

HIV is still a major cause of death in Siaya County with a prevalent rate of 11.1%. Siaya County would enhance a faster health care provision for patients who mainly rely on EMR's to manage their health conditions. At Siaya county health department, there is no existing standard tool for tracking quality of data that originates from the county's health facilities.

Automation of the existing RDQA for Siaya county health facilities seeks to set in motion the process of closing the gap of EMRs deficiencies and enhance efficient and quality health care provision through health informatics .The automation of the RDQA tool used in Siaya health facilities would lead to quality health care data provision through ICT support and E-health, reduction in overall death rate and longer life span to HIV/AIDS patients and victims in Siaya County. The project aims at assessing, verifying and developing action plans for quality and effective health system implementation.

1.3 GAP IDENTIFIED

Development of a web based RDQA for HIV data audit for Siaya health facilities sets in motion the process of closing gaps in health informatics identified by the OCA report 2015 for the Siaya county health department. The report on ICT support services domain indicates there is minimal use of ICT in reporting and quality data audit at the county department of health and in the health facilities. See the table 1 below for OCA Report 2015. The project seeks to advice on the extent to which healthcare facilities have the capacity in both human resources and infrastructure (hardware and software including locality). Additionally, there is a capacity gap in data analytics and auditing, as repeatedly expressed by the County and Sub-County Health Records in-charges across all the Siaya County sub counties. RDQAs will be implemented as a reporting tool to for the EMRs used in Siaya County

health facilities. The RDQAs will be implemented in a selected area at health facilities that provide services in prevention of HIV and AIDS. Key personnel (those responsible for reporting) from the health facilities, sub-district and district level will aid in the implementation of the new web based RDQA tool.

Domain (viii) Health Informatics

Objective: To strengthen capacity in the of use ICT operations to increase efficiency						
Outcome: Improved capacity in the of use ICT operations						
Sub-domain	Gaps Identified	Proposed Priority Actions	Deliverable or Output	Resources Required	Persons Responsible	Timeline
Software usage and availability	-Inadequate ICT software such as Ms office	-Procure ICT software for the department	-ICT Soft wares procured	Funds	County Health Director	June 2015
Hardware available (PC, Laptop, Servers)	-Inadequate computers	-Conduct ICT needs Assessment for the department -Procure hard wares	-Additional Hard wares purchased -ICT assessment Report	Funds, Expert	County Health Director	Sept 2015
ICT support services	-Lack of established ICT function -Lack of dedicated personnel for ICT	-Establish an ICT function/section to support the department and health facilities. -Recruit ICT officers -Develop ICT policy for the department and health facilities	-Dedicated ICT staff -ICT policy developed.	Expert , time , and Resources	County Health Director	Dec 2015
ICT reporting	-Minimal ICT use for reporting within the department	-Utilize and increase the use of ICT in reporting. -Establish and enhance connectivity in critical reporting point -Install router for internet -Monitor data entered in DHIS	-Reports from service points. -Enhance connectivity between service points -Internet available -Data monitoring mechanisms and reports	Funds, Expert	Deputy County Health Director	March 2016

Table 1: Siaya county health department OCA report (2015)

1.4 STATEMENT OF THE PROBLEM

Over the past five years, Siaya county health department has conducted numerous data quality assessments to determine the quality of reported data from the county's health facilities implementers. Often implementing sites as opposed to Head Offices tend to present the weakest data management reports. All the sub county health facilities plus their implementing partners (and their sites) contribute to DHIS2 data, which is also known to have data quality challenges. The project seeks to help capacitate health facilities in Siaya county implementation sites, as well as sub county health staffs who manage DHIS data. Existing RDQA offers a myriad of challenges in data assessment and verification. The existing RDQA is a manual spreadsheet that is normally sent to facilities through an email for the staffs and partners to fill and retransmit the departmental data back to Monitoring and evaluation staffs stationed at the Siaya county health department. The input of data into the RDQA spreadsheet by health informatics staffs and retransmission at the facilities for purposes of monitoring and evaluation gives forth into data integrity issues which eventually gets into the national DHIS2. It is on this basis that the web based RDQA tool comes to bridge the OCA 2015 report gaps. It will lead to strengthening and assessment of data that comes from the facilities thus ensures quality data gets into the national DHIS2.

1.5 PROJECT OBJECTIVES

a) PURPOSE

The RDQA is designed to perform system data management that includes inputs, processing, report generation and capacity building of staff involved in health system management.

b) OBJECTIVES

The project is designed to:

1. Input, process and Store health system data from the selected sites.
2. Generate quality data for reporting and decision making from selected sites
3. Assess, verify and monitor data from selected sites to produce quality data for feeding the DHIS2.

1.6 JUSTIFICATION / SIGNIFICANCE

The web based RDQA is designed to monitor and assess reports generated from the various county health facilities for the purposes of decision making and planning of health systems in the counties. The system generates quality data and reports for feeding the DHIS2. Information about quality data supply is essential for evaluation and assessment of health systems. The project aims at giving reliable information that would aid Siaya County health managers review their data and upscale their service delivery aspects in the county. The web based RDQA tool will help in health system strengthening and close the gaps identified in the Siaya County OCA 2015 report.

1.7 PROJECT IMPLEMENTATION METHODOLOGY

a) METHODOLOGY

Agile system development methodology was utilized. The methodology is iterative. It allows the users to be involved in all phases of the RDQA tool development thus owning the tool. According to Ambler (2004), in the Agile system development methodology, here, specific features of tasks are divided into frames to deliver the project activities. The methodology was used because of its iterative approach in building information system. The Agile process involves software interaction s, collaborations, and adhering to system development stages.

The figure 1 below shows the conceptual frame work for the RDQA system:

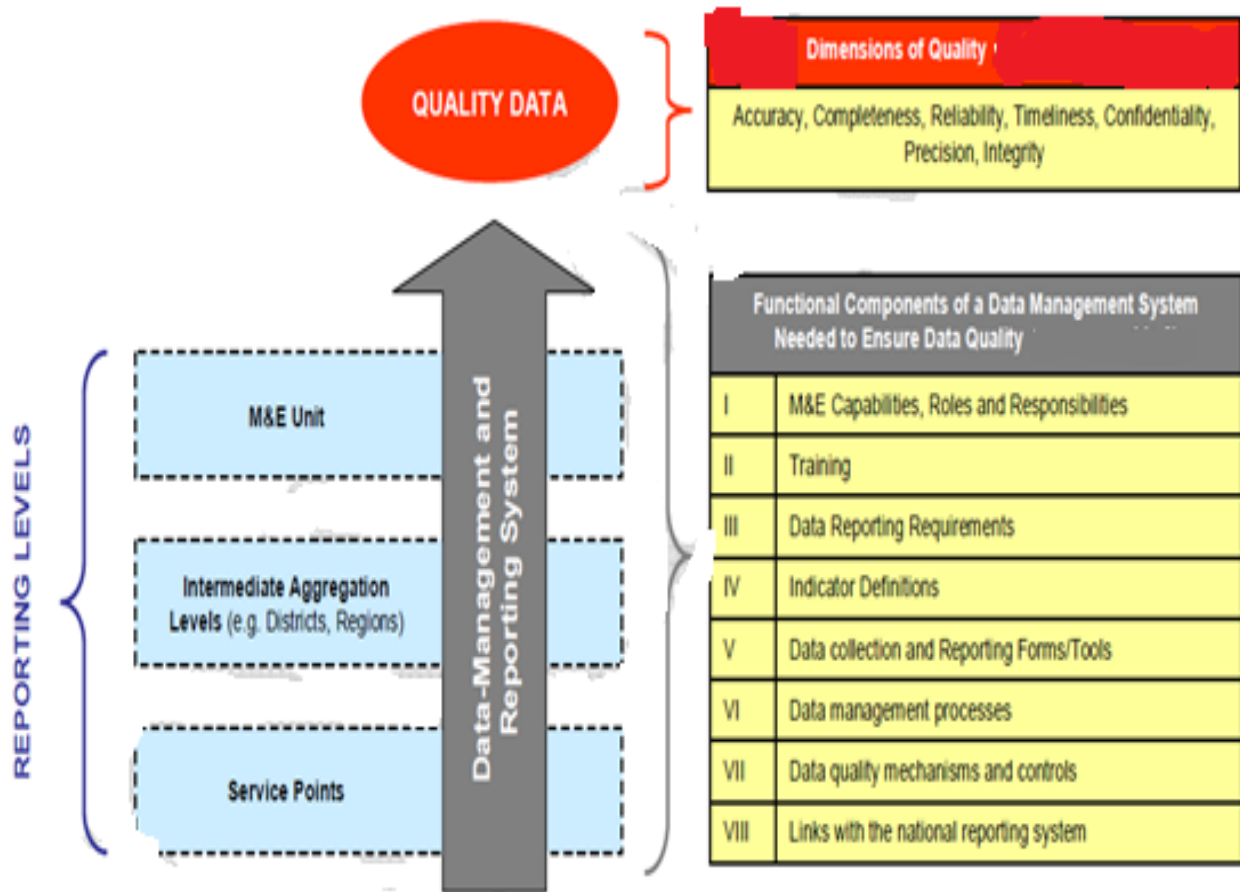


Figure 1: Web based RDQA conceptual framework.

The system was implemented using the phases of SDLC in a sequential, iterative or simultaneous approach to some activities. Each phase, discussed in the preceding section, details the activities, tasks and the actors involved.

i) SYSTEM ANALYSIS

This is an important and fundamental phase that ensures that the user requirements are clearly gathered and documented. The various techniques like interviews, stakeholders meeting, document review and observation were used to gather the user requirements. All feasibility studies (operational, economical, technical etc) was done to establish the viability of the project. Risk management operations for the project was also performed. SCRH M&E staff were involved in the problem identification. The existing manual file, like the green card was reviewed. I visited other facilities within the Siaya County to compare the system specifications gathered at SCRH and the existing system.

User requirement analysis involved the following:

- Gathering and documenting the health informatics user requirements.
- Interviews, stakeholders meeting (CHMT staff), documents reviews (E-Health partners) and making ICT utility tools observation.
- Visiting sample health facilities and track informatics inventory.
- Scrutinizing specification documents for determining functional and non functional requirements.

A system specification document was prepared; the document contains details on description of system users, their accounts and privileges. Some of the system users include the system administrator, hospital clinicians, mentor mothers laboratory technicians and nutritionist. The functional and non-functional requirements were also documented. Other requirements include report generation. The nonfunctional details documented include details on system usability, reliability security issues system users help section.

ii) System Requirements

The system requirements were broadly broken down into (a) Functional Requirements and (b) Non Functional requirements.

Functional Requirements details

System specifications were gathered to build the functionalities of the RDQA system. The developed system has the functionality of registering system users and clients, edit and search their details and provide timely required reports. The system can securely capture all the required facilities profile details and data management details. The system can assist in tracking county facilities health information system data input, validation, assessment, analysis and reporting of data from the site facilities.

Non Functional requirements details

User friendliness

- **User interface**

This will include logs and icons to aid in the system usability and operationalize the whole system process.

- **System Access**

This will be based on credentials and privileges provided to the system users.

Data Storage

- **Hosting databases/server**

This would be used in hosting of data and providing offsite storage of data from the facilities.

System Security

- **Data Transfer**

Data transfer will be done through an encrypted secure socket. Passwords shall be provided to the system administrators and users for system/data security purposes.

System Maintenance

- **Configuration Management tool**

The system code will be regularly maintained to minimize data entry and processing errors from the site facilities for quality data reporting and assessment.

- **Memory requirements** –Considerable memory size(2gb) and atleast 500gb of hard disk space would be utilized in installing the system. Hence, efficient and reliable computer system would be required to implement the system.

iii) SYSTEM DESIGN

It involves the design of the various system components like the input design, user interface design, database design, security design, output design and the systems transactions design. It will also includes design tools like ERD, DFD, Sequence diagrams, flowchart diagrams and data dictionary.

iv) SYSTEM DEVELOPMENT TOOLS

The following tools were used in the information system development:

- XAMPP Server will used to hold the database.
- MYSQL Database system
- The Interface was generated using HTML, visual studio and PHP.

The software above were available and user-friendly. Coding and setting up of the system using these software was easy and productive. The utilized less space in the server and were easy to generate various reports from the system with them hence forming the basis of their choice.

b) SYSTEM IMPLEMENTATION

The system implementation involved the following:

- Determining the purpose of the project,
- Facilities site selection and visits,
- Indicators/data sources identification,
- Review of outputs/reports and
- Developing of action plans and system strengthening.

iv) Product testing

The developed system was executed with the intention of identifying errors and validates logic in system transactions. The information system defects were identified and fixed. All the testing

activities namely: program testing, unit testing and acceptance testing were carried out. The system developer checked each program with the goal of identifying errors and resolving them. The main tasks were running test cases and recording the outcomes. Each module was subjected to unit testing. The activities included: preparation of test data, running test reviewing the results and debugging. During the black box testing the users' inputted data as developer checked on the outputted results. System testing documentation contained details of all the transactions and user activities. Finally, CHMT reviewed the system as part of the acceptance testing.

v) Training

Training was a vital activity for the new project; it does not only ensure stakeholders' involvement in the development and validation process but also impacts on ownership and acceptance. The system administrator was trained. The CHMT staffs in Siaya were also being trained. The staffs were initially allowed to interacting with the system, using dummy data to understand the system and enhance the acceptability and usability of the new system. The following system training activities were implemented.

- Identification of training needs
- Specification of the training goals
- Develop training content and the tasks to be performed
- Specify the learning objectives
- Carry-out the training
- Develop and implement evaluation instruments to assess training objectives.

System user’s training session sample photos, Venue: CHMT boardroom Siaya.



Fig. 2: Web based RDQA tool: System Users training session- VCT staff

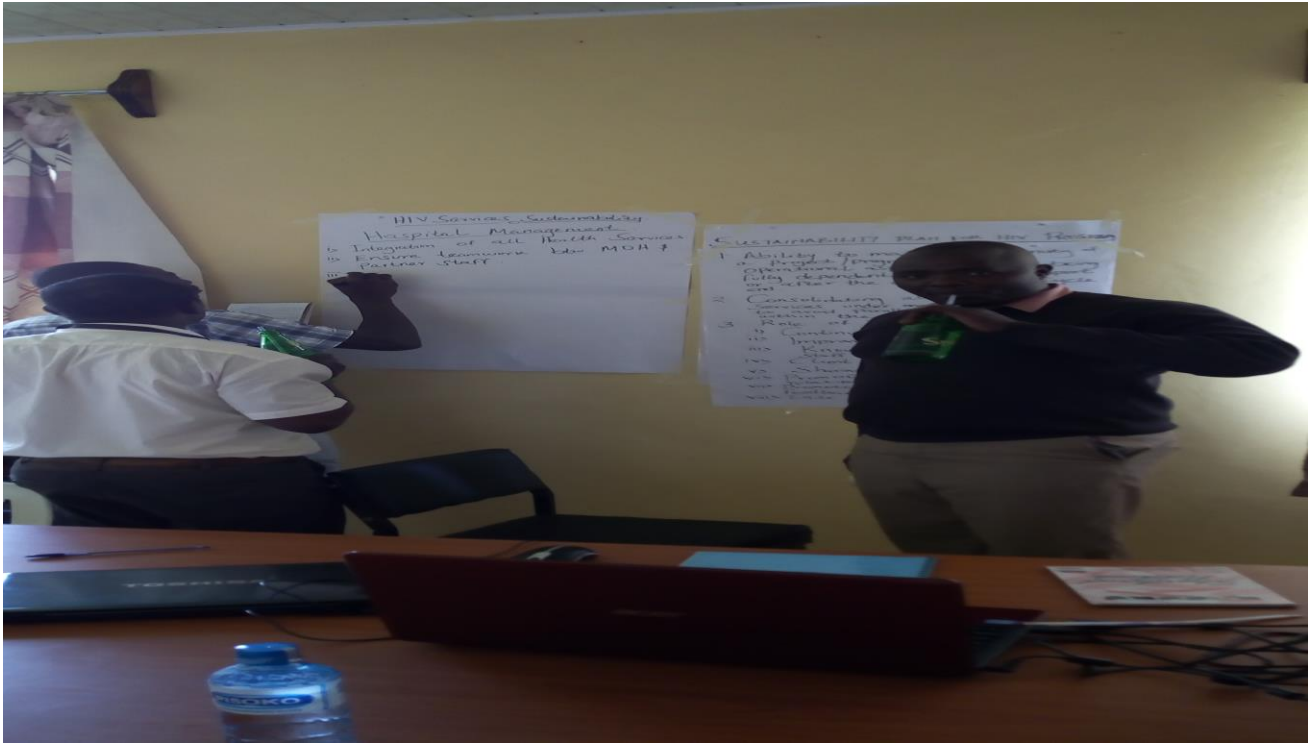


Fig. 3: Web based RDQA tool: System Users training session- Clinical Staff



Fig. 4: Web based RDQA tool: System Users training session- Health Records and information Staff.



Fig. 5: Web based RDQA tool: System Users training session- SHMT staff.



Fig. 6: Web based RDQA tool: System Users training session- CHMT staff.

1.8 SYSTEM USER MANUAL

This section describes the developed RDQA system solution in details including the stakeholders and users. System main features are described here that includes the database design, transaction design and user interface design.

1.8.1 *The System Overview and Interfaces.*

The developed RDQA system is web based. The system is composed of the following:

- **Dash board Main input Module** – That enables the user to enter facility service Points (Regional, District and Local).
- **Data Verification and System Assessment module-** for recounting and cross checking results of data from other sources.
- **Facilities Information Module** - Provides basic facility service points information (Sites, indicators, M&E management units etc.).
- **Systems Assessment Module** – provides guideline for data monitoring and evaluation.
- **Recommendations for the Service Site Module** – A module that provides for recommendation of system strengthening and improvement operations at an estimated length of time.
- **Dashboard: (Main Output Module).** For service delivery points, processing and output.

The information system will be within the hospital setup and shall provide the point of management and administration of the various system features. The system is installed in a computer at the facilities where all information will be output and stored.

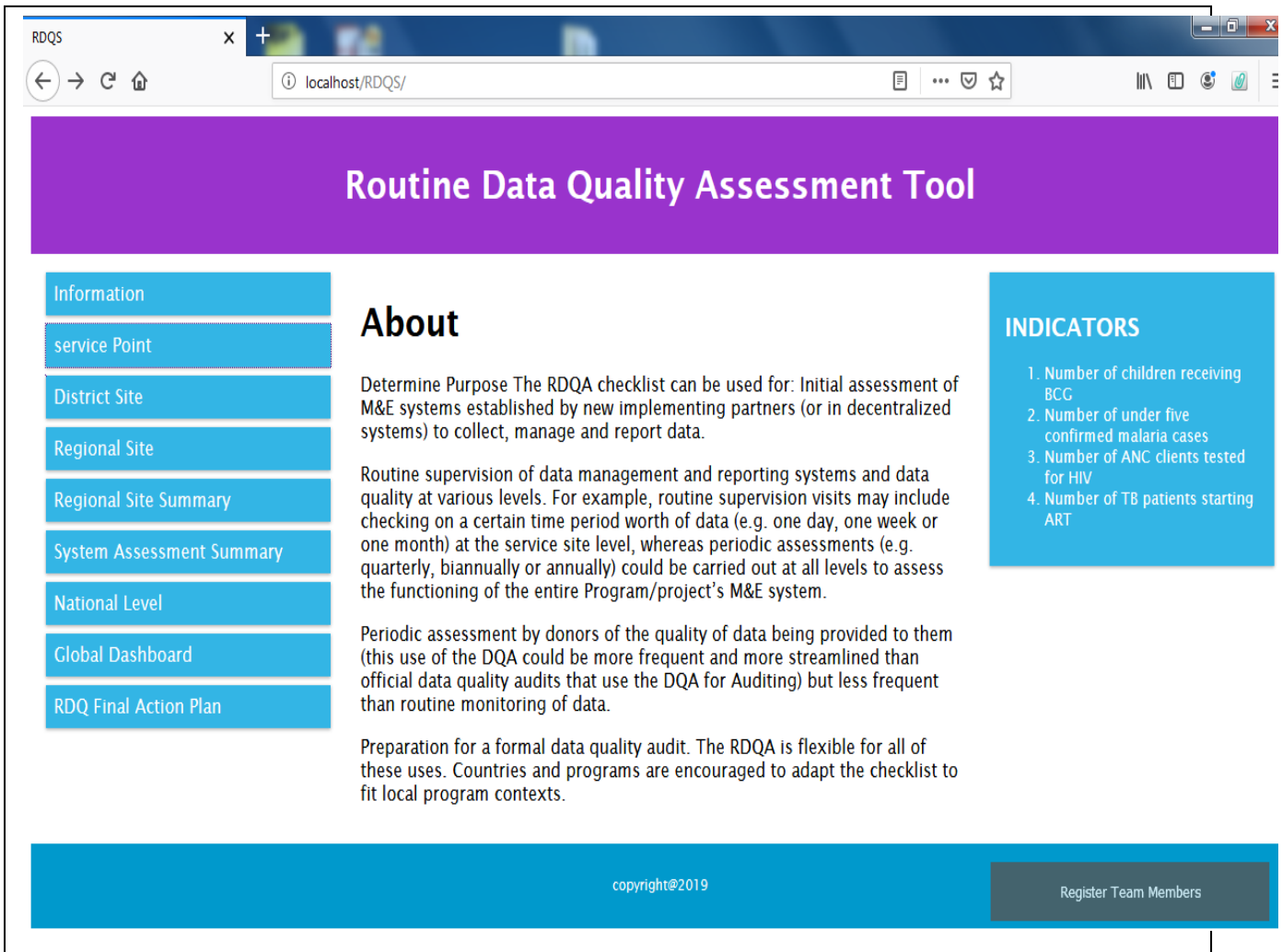


Fig. 7: Web based RDQA tool: User Login dashboard screen

1.8.2 System Requirements and Installation.

Requirements:

1. Installed PHP server (xampp server)
2. Mysql
3. Browser preferred Mozilla chrome

Install the PHP server and set the MYSQL server too

Unzip the provided zip and have them in the root of your server, edit the .env file with the appropriate configurations that you have set up for your environment.

System setup:

1. On the browser access a URL and once the page is loaded click my account and sign in using:

Username: superadmin@mail.com

Password: password

Then click on dashboard to access the backend

This is the frontend page of the system that can be customized to fit and carry any message that you will require.

2. Once in the dashboard to access the admin portal, click on the options on the left.

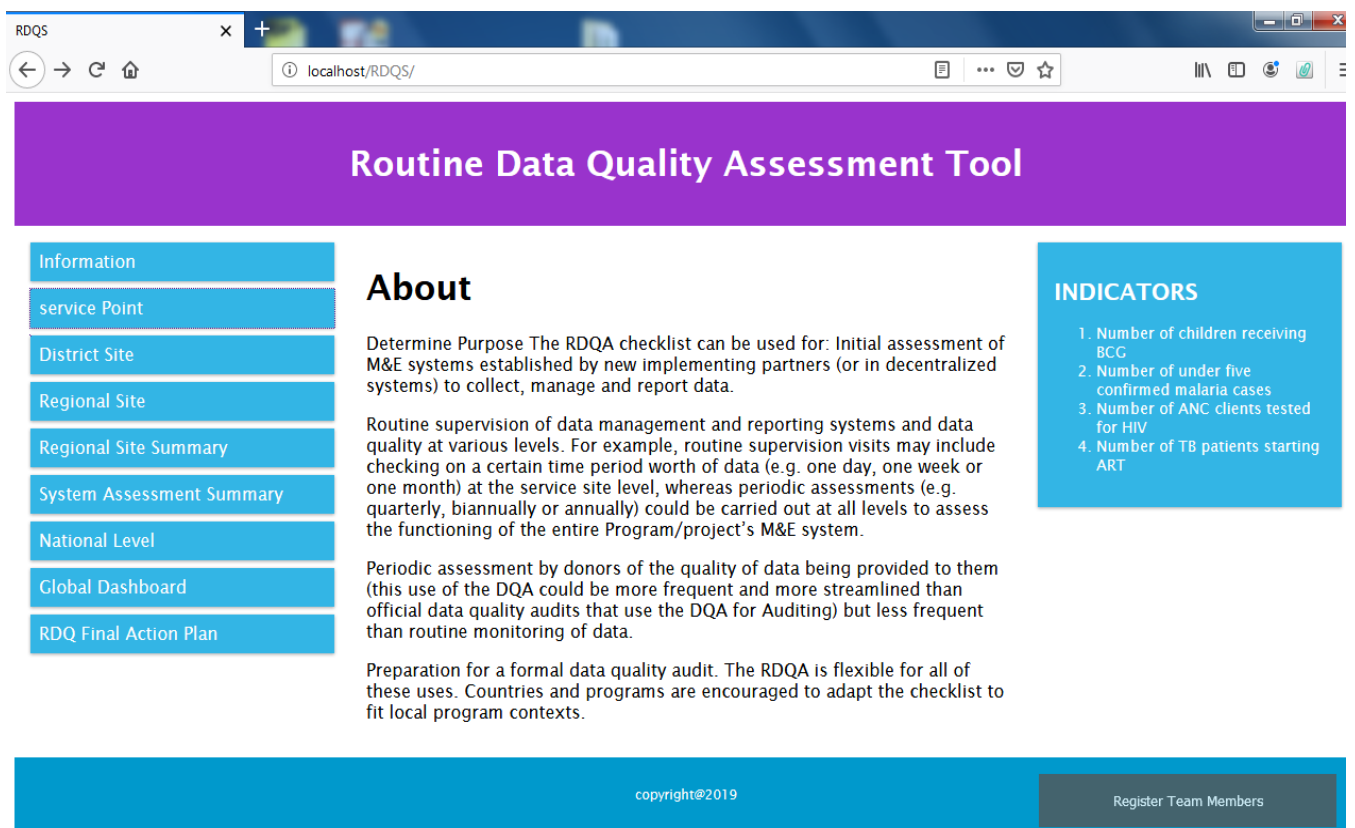


Fig. 8: Web based RDQA tool: User Admin Portal Screen

I. **CRUD generator** contains all modules used in the system please don't edit or remove any of this

II. Settings

Includes:

- a. General settings of the website, email addresses to be used,
- b. Logins and security where one can set up the different secure ways to have logins.

We can also restrict certain IP addresses from accessing the application and only allow others.

III. MENU MANAGEMENT- this is used to order different menus and also give rights to user to be able to view different menus available.

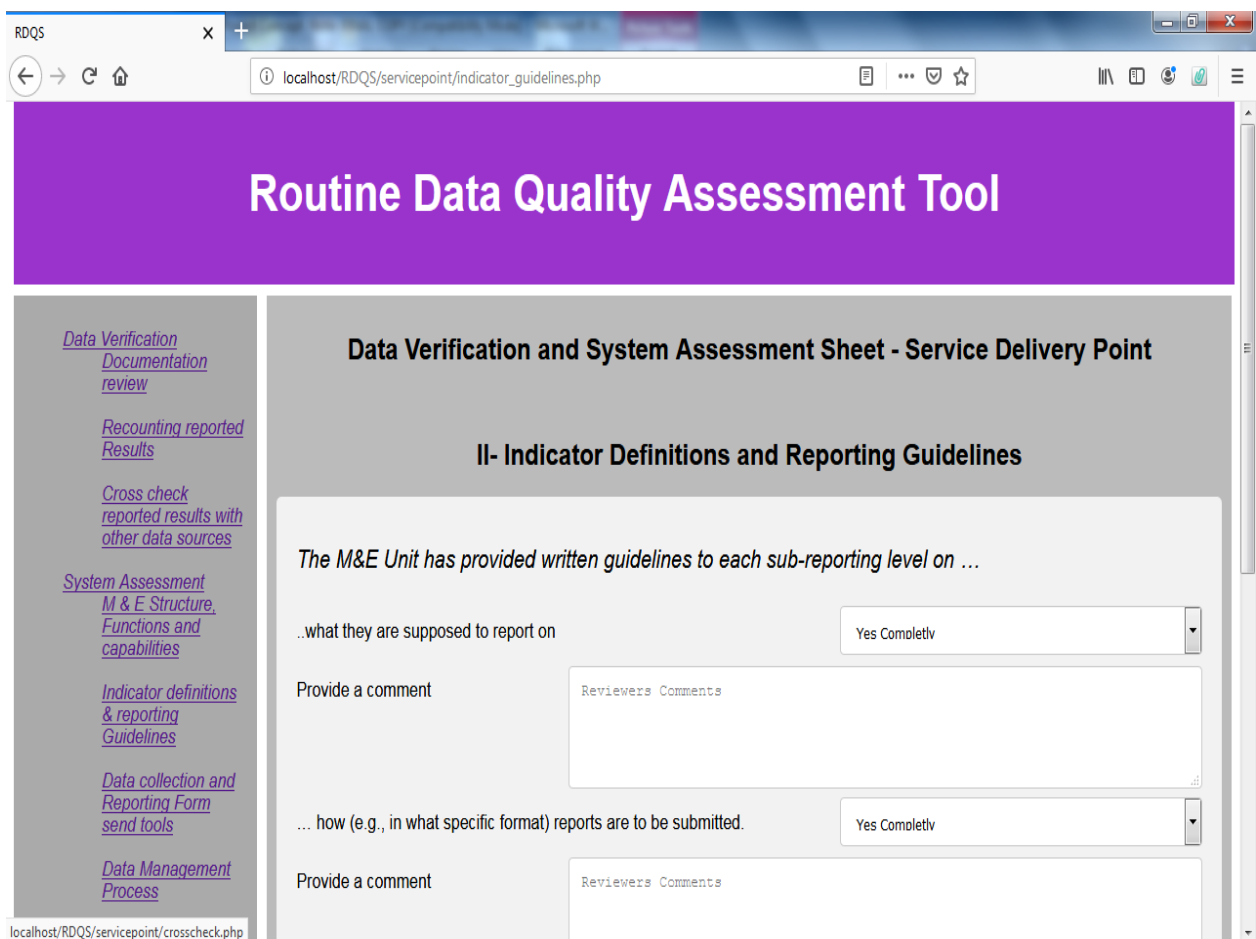


Fig. 9: Web based RDQA tool: Data Verification and Assessment Menu Screen

a. To edit the menu click menu setting and click on the side menu click on the edit menu then it will open the menu on the right side of the screen here you free to edit to nay configurations you want. Remember after changing anything ensures you save.

b. Under the access subsection- select the roles that you want to access the menu

1.8.3 System users/ user accounts /privileges

The system features are accessed using usernames and passwords that are given upon registration. Data tracking is done automatically and reports generated. The various system users have varied privileges when accessing functionalities in the system (they only access what is necessary for them) this is particularly to ensure data integrity and confidentiality. The developed system provides for the following roles:

- System administrator.
- CHMT members.
- County M& E Staff.
- Sub County Health Information Officers.

Routine Data Quality Assessment Tool

Information

- service Point
- District Site
- Regional Site
- Regional Site Summary
- System Assessment Summary
- National Level
- Global Dashboard
- RDQ Final Action Plan

About

Determine Purpose The RDQA checklist can be used for: Initial assessment of M&E systems established by new implementing partners (or in decentralized systems) to collect, manage and report data.

Routine supervision of data management and reporting systems and data quality at various levels. For example, routine supervision visits may include checking on a certain time period worth of data (e.g. one day, one week or one month) at the service site level, whereas periodic assessments (e.g. quarterly, biannually or annually) could be carried out at all levels to assess the functioning of the entire Program/project's M&E system.

Periodic assessment by donors of the quality of data being provided to them (this use of the DQA could be more frequent and more streamlined than official data quality audits that use the DQA for Auditing) but less frequent than routine monitoring of data.

Preparation for a formal data quality audit. The RDQA is flexible for all of these uses. Countries and programs are encouraged to adapt the checklist to fit local program contexts.

Register Assessment Team

Name
Enter Email

Reporting Period Date
Reporting date

Title
Enter Title

Email
Enter Email

Register Member

Close

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Fig. 10: Web based RDQA tool: System Users Screen

1.8.4 System Administration

At the top of the hierarchy shall be a system admin whose role will be to manage the system and manage roles of other people in terms of what to access and when. Register users and the manage system content. The admin will provide overall Support to the rest of the team of users.

2.0 PROJECT RESULTS

The key deliverable in this project is an automated web based RDQA information system for Siaya county health department (SCHD). The developed system will ensure that the SCRH data is securely gathered and kept within the system. The system facilitates ease of search, validation and assessment of any information that may be required. Manual file and critical data is never lost. The system assists in tracking and assessment of facilities data to ascertain its integrity. The management of the HIV patients data clients can then be effective and efficient because all the required information is readily accurate and available.

2.1 EXPECTED OUTCOMES/ OUTPUTS

The key deliverable in this project is a web based RDQA tool for Siaya county health facilities audit. The RDQA's focus on HIS data reporting serves as a means of contributing to one of the National Department of Health's priority areas. Strengthening EMRs services will help to:

- Reduce HIV related maternal mortality (MM); HIV is the biggest contributor to MM.
- Reduce HIV related infant mortality (IM); HIV is the biggest contributor to IM.
- Reduce TB.
- Strengthen health systems through involvement of facility, district and sub-county staff.

2.2 REPORTS AND OUTPUTS

i) Reports

By institutionalizing the Routine Data Quality Assurance tool project, it is expected that:

- ✓ Efficient and quality data reporting system will be developed that informs sectoral plans and strategies with objectivity

- ✓ RDQA systems will be institutionalized at all levels of the health department of Siaya
- ✓ RDQA activities will be conducted in a timely and uniform manner
- ✓ Efficient RDQA processes that easily identify impacts and bottlenecks will be utilized at service delivery level.
- ✓ The tool will militate against creation of parallel reporting systems.

ii) Outputs

Having the RDQA tool and guidelines means that there will be:

- i. Collaborative efforts to invest in quality data.
- ii. Development and investment in technology to ease work in data management
- iii. More forums for data review and performance process.
- iv. Enhanced capacity building in data management process at the facilities levels.
- v. Mitigation against the acute shortage of staff with deployment of more Health Records Information Officers (competent in data management) at the service sites
- vi. Advocacy and incentives for record keeping, timely reporting and completion of data tools
- vii. Proper orientation on indicators and data collection methods
- viii. Minimizing multiple tools used in collecting, collating, aggregating and reporting data and information.
- ix. Improving work space for Health Records and Information Officers (HRIOs) and records storage capacity.
- x. Entrenching the roles and responsibilities for data management across all levels through targeted supportive supervision.

2.3 PROJECT IMPACT

The main objective of developing this web based RDQA information system is to ensure that we have zero percentage errors from data originating from the health information departments that finally gets to DHIS2. The system ensures that all the facilities details in the county are securely

captured, validated and assessed for integrity. The assessment of data will facilitate efficient management of HIV cases for expectant women, mothers and infants and give accurate feedback fed to the national DHIS2 for monitoring HIV prevalence in the counties of Kenya.

The developed system ensures ease of access to data for any inconsistency unlike the earlier situation where manual files were kept and assessed later with the risk of losing the files or critical facilities details. All that system development Phases were systematically adhered to. The system users were fully involved in all the phases. As a result the system specifications were correctly gathered and documented. The users were also involved in system testing and system test results well documented. The system users were thoroughly trained before system implementation and the system user manual developed.

Lastly the web based RDQA system provides on demand report of validated and assessed data from the county referral and sub county facilities which are useful in evaluation of the Siaya County health services and HIV prevalence.

2.4 RISK MANAGEMENT PLAN

One approach used to manage the risks was proper planning, definition of the scope of the system and frequent consultation with all the stakeholders. The plan stated what activities should be done, at what time and by which individual. Documentation of what had been done and frequent reporting during meetings increased chances of success. For delayed funding, activities still went on and were paid for once funds were available. To ensure availability of programmers during coding phase, I contracted two of them in case one is not within reach. Indeed, if risks hadn't been planned for, it would have been difficult to complete the project.

2.5 PROJECT MONITORING AND EVALUATION

Monitoring and evaluation was based on activities, tasks that were to be done and the completion dates. Timelines, as indicated in Table 2 below, were used to measure achievement of targets. The activities were evaluated against the set targets and results documented. There were scheduled review meeting to report on progress and revise on each version released. The technical working group frequently met to discuss on progress and challenges that may arise and affect project implementation.

Monitoring and evaluation of the new web based RDQA tool for HIV data quality tracking was carried as follows:

Phase 1 – Training in RDQA Methodology.

Phase 2 – Mentoring in RDQA data collection / analysis and reporting and providing follow-up Technical Assistance (TA).

Phase 3 – Follow-up RDQA (for those sites with material Data Management System [DMS] weaknesses).

Phase 4– Partner Sharing Workshop.

Phase 1: Involved one to two day training on data quality and use of the RDQA tool at a central location in the selected sub-Counties health facilities and staff. The training focused too much on abstract concepts but will rather include practical exercises using the RDQA tool.

Phase 2: Siaya Sub Counties CCC service providers (health facilities), assisted by health care partners, conducted their own RDQAs on data they reported to their sub-counties. Sub county health information teams assisted to conduct their own RDQAs on data they received from the health facilities and captured into the DHIS. This was followed by a six week period where health facility, partner, sub-counties health staff were given technical assistance by the CHMT staff to address weaknesses identified during the RDQAs.

Phase 3: Follow-up on RDQA was conducted by CHMT staff to identify any additional vulnerable areas in data management systems and to assess progress made towards addressing challenges identified in Phase 2.

Phase 4: Sharing meeting with all the health facility staff, CCC programs implementers, county and sub counties health staff who were involved in the RDQA. This presented a platform where data management challenges could be shared and possible solutions suggested.

RDQA implementation was planned to take place between May and September 2019.

Activity	May	June	July	August	September
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Project close out					

Table 2: RDQA Implementation Plan.

By implementing the RDQA at the sub- counties in Siaya, the CHMT staff can help strengthen the M&E capacity for county, sub-counties and national government health staff with the ultimate objective of improved patient care and good data quality.

2.6 ETHICAL ISSUES

The data involved in Siaya County health department is very critical and must be handled with utmost care. To achieve this adherence to the guidelines of the Ethical Review Committee pertaining to the following was observed:

Security – The users of the systems were assigned access rights based on their responsibility.

Privacy and confidentiality – The system is utilized by only authorized personnel to enhance data integrity issues.

2.7 LESSON LEARNT

Hands-on skills on project management were acquired in project scope management, time management, human resource management especially need to involve all the stakeholders throughout the system development phases. This allowed the specifications gathered to be accepted and owned together with the developed product. Communication skills were acquired e.g. the need to keenly listen to the stake holders and patiently explain to them all the activities that are being carried out.

The system development skills were enhanced, these included the specification documentation skills system design skills especially the database design that would meet the data requirements of the RDQA processes. Other skills are programming skills, system testing skills and user

training skills. HIV care and management skills were gained. Siaya county health department RDQA processes were learned and clearly understood.

2.8 CHALLENGES

The overall project implementation was a great success; however there were few challenges that were encountered. Gathering and documenting system specifications was a great challenge. The users were not fully aware of their interest, they kept on raising new specifications throughout the development process, and the system kept on being changed to incorporate the new requests. There was delay in disbursement of the project funds, which slowed down the activities as planned in the timelines. Lastly the developed RDQA system being a web application requires access to internet within the SCRH facility, so when there are network challenges the system is affected.

2.9 PROJECT SUSTAINABILITY

The management of SCRH and particularly the CHMT staff and health information/records sections will ensure that the project has continuity after implementation. All the system users were thoroughly trained and involved in all phases of system development to enhance system ownership. The system administrator was virtually involved in all activities of the project development and implementation, he was trained and has the capacity and capability and supporting the system. The system user manual was developed and made available for all the system users. Lastly I remained available for any consultation that appertains to the functionality of the system.

3.0 CONCLUSION

The RDQA system can provide all the required information and timely reports to ensure that this broad objective of ensuring data integrity is effectively and efficiently achieved.

Involvement of stakeholders throughout the process of system development and training users proved to be vital activities that facilitate ownership of the developed RDQA system.

3.1 REFERENCES

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3.2 APPENDICES

A. Current Sample RDQA Sheet.

RDQA Multi-Indicator tool (7) [Read-Only] [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View QuickBooks

Cut Copy Paste Format Painter Clipboard Font Alignment Number Styles

H24

Data Verification and System Assessment Sheet - District Site						
2	District Site/Organization:		-			
3	District, Region		-			
4	Indicator(s) Reviewed:		1) Number of children receiving BCG, 2) Number of under five confirmed malaria cases, 3) Number of ANC clients tested for HIV, 4) Number of TB patients starting ART			
5	Date of Review:		-			
6	Reporting Period Verified:		-			
7	Component of the M&E System		Answer Codes: Yes - completely Partly No - not at all N/A	REVIEWER COMMENTS (Please provide detail for each response not coded "Yes - Completely". Detailed responses will help guide strengthening measures.)		
9	Part 1: Data Verifications					
10	A - Recounting reported Results:					
11	<i>Recount results from the periodic reports sent from service sites to the District and compare to the value reported by the District. Explain discrepancies (if any).</i>		Number of children receiving BCG	Number of under five confirmed malaria cases	Number of ANC clients tested for HIV	Number of TB patients starting ART
12	1	Re-aggregate the numbers from the reports received from all Service Delivery Points. What is the re-aggregated number? [A]				
13	2	What aggregated result was contained in the summary report prepared by the District (and submitted to the next reporting level)? [B]				
14	3	Calculate the ratio of recounted to reported numbers. [A/B]	-	-	-	-
15	4	What are the reasons for the discrepancy (if any) observed (i.e., data entry errors, arithmetic errors, missing source documents, other)?				
16	B - Reporting Performance:					
17	<i>Review availability, completeness, and timeliness of reports from all Service Delivery Sites. How many reports should there have been from all Sites? How many are there? Were they received on time? Are they complete?</i>					
18	5	How many reports should there have been from all service sites? [A]				
19	6	How many reports are there? [B]				
20	7	Calculate % Available Reports [B/A]			-	
21	8	Check the dates on the reports received. How many reports were received on time? (i.e., received by the due date). [C]				
22	9	Calculate % On time Reports [C/A]			-	
START / INSTRUCTIONS / Information_Page / Service Point 1 / Service Site Summary / District Site 1 / District Summary / Regional Site 1 / Regional Summary						

Ready

B. Project Legislative and Regulatory Instruments.

- **Constitution of Kenya 2010:** The constitution of Kenya obligates every State organ to take legislative, policy and other measures, including setting of standards to achieve the progressive realization of the rights guaranteed in Article 43.

- **Legislations:** Some of the legislations that seek to protect one's privacy include Kenya Information and Communications Act, 2015; the Draft Health Bill, 2016; Open Data Protection Bill, 2013; Draft Cyber Security and Protection Bill, 2016; and the Access to Information Act, 2016. The revised Kenya Information and Communications Act have provisions on electronic transactions and cyber security. Furthermore, once the Draft Health Bill 2016 is enacted; the law will protect and regulate use of e-Health in the collection, retrieval, processing, storage, use and disclosure of personal health information.

- **Strategic and action plans:** Some of the strategic and action plans that form the foundation of the KeHP include: Sustainable Development Goals (SDGs), Kenya e-Health Strategy (2011-2017), Kenya Health Sector Strategic and Investment Plan (2014-2018), Vision 2030, and the National ICT Master Plan.

- **Policy documents:** Given that e-Health policies cannot be implemented in isolation, this document is anchored on the policy frameworks provided by the Kenya Health Policy (2014-2030), Health Information Policy (2014-2030), and the ICT Policy 2006.

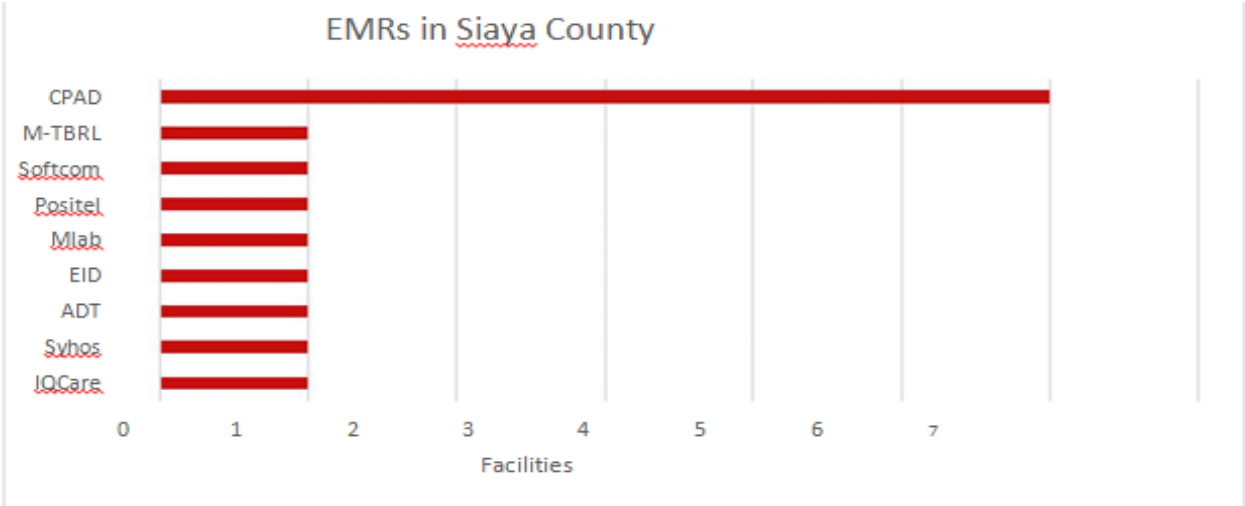
- **Global e-Health standards:** There are several standards that have been developed to ensure interoperability, security, quality and meaningful use of ICTs in healthcare.

C. Health Information Partners in Siaya.

	PARTNER CONTRIBUTION							Total
	Software	Manual tools	Facilitation	Capacity building	IT equipment	Improved systems	Medical supplies	
Palladium	3	3	5	0	0	0		3
KARP	1	1	1	0	0	0		1
CHS	2	2	6	2	3	1		6
PIMA		1		1				2
KMET		1	1					2
Matibabu		1	1			1		3

D. Sample EMRs Within Siaya County Health Facilities.

In Siaya county nine (9) Electronic Medical Records systems (EMRs) have been deployed and distributed as below. CPAD is the most popular EMR in the county being used in 6/8 facilities.



Across the Sub county health facilities, there has been no comprehensive assessment of available EMRs; neither is/are there specific recommended EMRs in any of the Sub county. The available EMRs are under-utilized, deployment being mainly for Comprehensive Care Clinics that are partner supported.

E. Data Quality Dimensions.

The RDQA is grounded in the components of data quality, namely, that Programs/projects need accurate and reliable data that are complete, timely, precise, credible and maintained under conditions of confidentiality, when appropriate.

F. Ant plagiarism Report.

A WEB BASED
ROUTINE DATA
QUALITY
ASSESSMENT (... By
George Okoth

Similarity by Source	
Similarity Index	
6%	
Internet Sources:	5%
Publications:	0%
Student Papers:	2%