Data Quality Assessment for Neglected Tropical Diseases: Guidelines for Implementation

December 2013

Working draft for field-testing

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LIST OF ACRONYMS

CDD	Community Drug Distributor
DQA	Data Quality Assessment
GAVI	Global Alliance for Vaccines and Immunization
LF	Lymphatic Filariasis
M&E	Monitoring and Evaluation
MDA	Mass Drug Administration
MoH	Ministry of Health
NTDs	Neglected Tropical Diseases
PC	Preventive Chemotherapy
PPS	Probability Proportional to Size
PSU	Primary Sampling Unit
RTI	RTI International
SDP	Service Delivery Point
SSU	Secondary Sampling Unit
STH	Soil-transmitted Helminthiases
TSU	Tertiary Sampling Unit
USAID	United States Agency for International Development
VF	Verification Factor
WHO	World Health Organization

Acknowledgements

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Glossary

The following terms are used throughout the guidelines and the DQA tool.

Assessment Period: This refers to the time period when the Preventive Chemotherapy (PC) round under assessment was conducted. The Assessment Period should ideally be determined by the Ministry of Health which commissions the DQA.

National: This refers to the first administrative level, where treatment data and drug stocks are aggregated for the entire country. At this level, the disease program managers, National Secretariat, and other partners review the data and make decisions.

Intermediate data aggregation level: This refers to administrative levels, lower than the national level but higher than the drug distribution level, where PC data aggregation takes place. The number of intermediate aggregation levels may vary between countries. The DQA tool provides for up to 4 intermediate levels with intermediate level 1 representing the next level after community, followed by level 2, etc.

Service Delivery Point: Service delivery for NTDs may include prevention of NTDs through PC (SAFE for trachoma), management of morbidity and disability prevention, and/or treatment of cases, among other possible interventions. The Service Delivery Point (SDP) refers to the lowest administrative level, school or fixed point where an intervention benefiting a population (i.e., service delivery) occurs. For PC diseases, these are typically communities, villages, or schools where PC has taken place and treatment data are compiled from the treatment registers or tally sheets by the Community Drug Distributors (CDD), teachers or health workers.

Sampling Unit: Administrative geographic areas in which Service Delivery Points are located. Data are tabulated and aggregated in these areas. During the DQA, some of these areas are selected as part of a sample where the assessment will take place. Depending on the number of administrative levels in a country, these may be divided into primary sampling units (PSU), secondary sampling units (SSU), and tertiary sampling units (TSU).

Source documents: Data collection tool(s) where service delivery is first recorded. For PC NTDs, these may include treatment registers, PC tally sheets, inventory records at the distribution level, etc. For other NTDs, these may include patient records, etc.

Documentation/Report Availability: Percentage of source documents/reports that can be retrieved.

Documentation/Report Timeliness: Percentage of source documents/reports that were compiled/submitted by the due date.

Documentation/Report Completeness: Percentage of source documents/reports that contain all required data for indicators.

Verification Factor: Ratio of recounted value of the indicator to the reported value. Measures the accuracy of reported data.

Introduction

Over 2 billion individuals are at risk for one or more neglected tropical diseases (NTDs), which cause substantial morbidity, and in some cases mortality, worldwide. Five of these diseases—lymphatic filariasis (LF), onchocerciasis, schistosomiasis, soil-transmitted helminthiases (STH), and blinding trachoma—can be prevented through preventive chemotherapy (PC). PC aims to treat at-risk populations with safe and effective drugs once or twice a year in order to control, and in some cases, eliminate these diseases.

The frequency of PC may be altered when disease prevalence reaches a certain threshold, achievable through high coverage of the at-risk populations. For example, if an at-risk population is treated for LF for 5 or more years with coverage greater than or equal to 65% of the at-risk population, it is anticipated that disease prevalence may decrease substantially enough to interrupt disease transmission and therefore be able to stop PC. The World Health Organization (WHO) has recommended coverage as the primary performance indicator for monitoring PC activities (WHO Monitoring Drug Coverage for Preventive Chemotherapy, 2010).

Generous drug donations from pharmaceutical companies, including GSK, Johnson and Johnson, Merck, and Pfizer, have facilitated the scale-up of PC in many countries. The number of drugs donated is determined in large part based on country reports of population requiring treatment, number of individuals treated (by age-group and by gender), treatments, and drug stock levels.

The expanded drug donations and the programme goals presented in the NTD roadmap for implementation[1] highlight the importance of a robust monitoring and reporting system, from the point of treatment by a drug distributor to the national and international levels. In 2003, a Data Quality Audit tool was developed for the Global Alliance for Vaccines and Immunization (GAVI) to verify reported immunization coverage data and to build capacity to improve monitoring and reporting activities. In addition, a Data Quality Assessment (DQA) tool was developed as a standard method to verify reported data and assess data management and reporting systems for tuberculosis, malaria, and HIV/AIDS programs. This document adapts these existing methodologies to develop a tool for assessing the quality of data for NTDs. The DQA Tool for NTDs focuses exclusively on (1) verifying the quality of reported data, and (2) assessing the underlying data management and reporting systems for standard program-level output indicators.

Collation and transmission of good quality data from the community level up to the district and national levels has presented a major challenge in a number of countries where PC is being implemented. Data received at the national level are often incomplete, not timely or of questionable accuracy. There is need for systematic assessment of the data management and reporting system to determine if key elements of the program's data management and reporting system are being implemented at all data retrieval levels, and to trace and verify reported data from source documents for selected indicators.

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[1] WHO 2012, *Accelerating work to overcome the global impact of neglected tropical diseases a roadmap for implementation.* Accessible at http://www.who.int/neglected_diseases/NTD_RoadMap_2012_Fullversion.pdf, accessed 20 August 2013.

Data Quality Assessment Overview

The purpose of this DQA is to validate the reported achievements within the health information monitoring and reporting system, and as well as to identify areas that need strengthening.

The objectives of the DQA for NTDs are to:

- Assess the quality of reported NTD data for a given assessment period
- Assess the ability of NTD data management systems to collect, transmit, document and report quality data

The DQA comprises both quantitative and qualitative measures in order to reach these two objectives. This is done by recounting and verifying reported data at selected sites; reviewing the availability, completeness, and timeliness of source documents and reports; and qualitatively assessing the data management and reporting systems at different levels.

To conduct the DQA, the assessment team will have to first make some preparatory efforts, including selecting the indicators and sites to be assessed. This preparation will be followed by the DQA implementation, where the data in available reports are recounted at each level of the NTD reporting system (such as village, sub-district, district, and national level), and compared with the values that were reported for that level, to verify the reported data (i.e., "data verification"). Additionally, individuals who are involved in data collection and reporting are interviewed, in order to qualitatively assess the NTD data handling and management system (i.e., "systems assessment"; see Figure 1). Finally, an action plan is developed, with recommended activities to address any areas that need strengthening. The findings are then drafted, presented and finalized.

Measuring Data Quality

The DQA tool measures accuracy, reliability, completeness, and timeliness through the data verifications component. Precision, integrity, and confidentiality are assessed through the systems assessment. (Please see Appendix 1 for operational definitions of each of these dimensions of data quality.)

These guidelines will go into more detail about the methodology (including Data Verification and Systems Assessment) and each of these phases (Preparation, Implementation, and Compiling Results). Figure 2 shows an overview of the steps for each phase.

Figure 1. Process for Data Verification and Systems Assessment

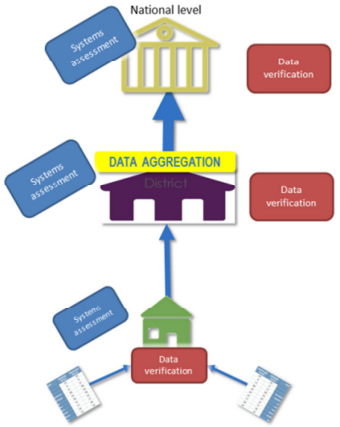
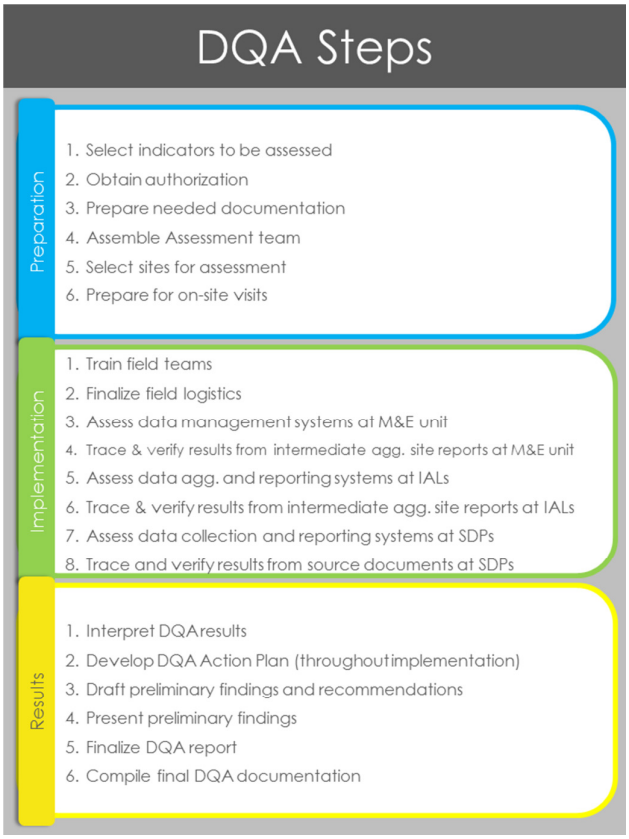


Figure 2. DQA Steps

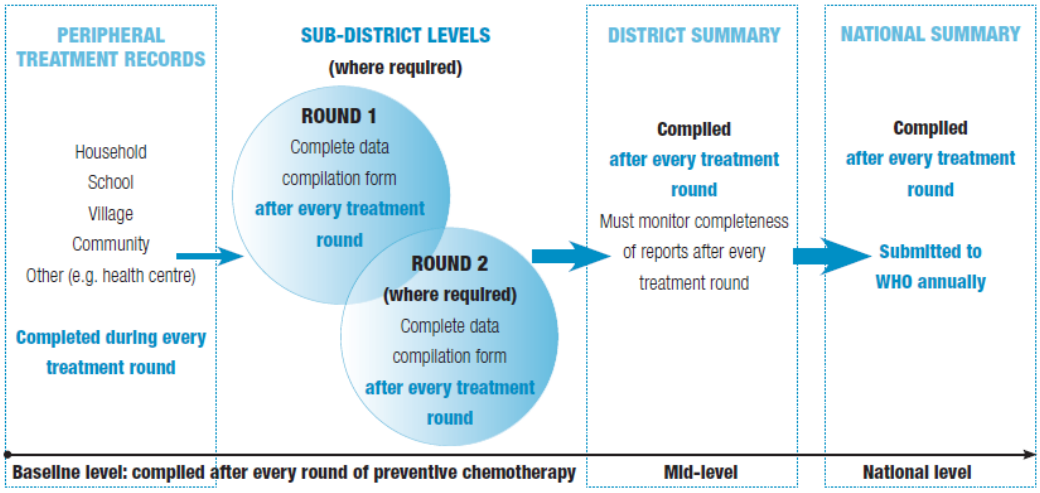


Flow of Data for Preventive Chemotherapy

Prior to implementing a DQA for PC, it is important to clearly identify the reporting pathway for the selected indicators in the country to be assessed. This includes where the reports are stored, and whether there are copies of the reports both at the level where the report was compiled and at the level where the report was sent.

Service delivery for PC programs typically takes place at the community level, either through community-based, school-based, or fixed-point distribution. The flow of data varies from country to country, very often depending on the number of administrative levels from the community to national level. WHO recommends a data flow that runs from the peripheral units via sub district levels to the district and national level, as shown in Figure 3 below.

Figure 3: Recommended data flow for preventive chemotherapy[2]



Methodology

The DQA uses both quantitative as well as qualitative methods to assess the quality of reported data and the data management system. This section provides an overview of the DQA tool to be utilized, followed by a description of the quantitative methods to verify reported data, and then an explanation of the qualitative assessment of the data management and reporting system.

[2] Source: WHO, 2010. Monitoring drug coverage for preventive chemotherapy

DQA TOOL OVERVIEW

The DQA Tool includes 11 categories, corresponding to pages in a Microsoft Excel workbook:

- **1- Start:** to select the number of service delivery points and intermediate aggregation level sites to be included in the DQA.

- **2- Acknowledgement:** to recognize and acknowledge the key players in the development of the NTD DQA tool.

- **3- Instructions:** to inform users how to use the Excel spreadsheet.

- **4- Information:** to record the country, drugs administered during the PC round under assessment, indicators assessed, time period of the PC round assessed, assessment team as well as service sites and intermediate aggregation sites.

- **5- Service Delivery Point:** to record results of data verifications and systems assessment at the service delivery level and a dashboard of results of the data verification and systems assessment for each service delivery point.

- **6- Intermediate Aggregation Level Site:** to record results of the assessment on data verifications and systems assessment at the intermediate aggregation level sites, and a dashboard of results of the data verification and systems assessment for each intermediate aggregation level site.

- **7- Summary Sheets:** to summarize the data across all SDPs and each intermediate aggregation level, by presenting a dashboard of results of the data verification and systems assessment for all the sites in a given level.

- **8- National M&E Unit:** to record results of the assessment on data verifications and systems assessment at the M&E Unit, and to show a dashboard of results of the data verification and systems assessment for the M&E Unit.

- **9- Systems Assessment Details:** to present the responses for each question of the systems assessment in each of the SDPs and Intermediate Aggregation Level Sites.

- **10- Systems Assessment Summary:** to present the systems assessment score of each functional area in the data management and reporting system, by each SDP and Intermediate Aggregation Level Site.

- **11- Global Dashboard:** to present in graphic form aggregated results from all levels of the assessment.

The three main "data collection" sheets of the DQA tool are the Service Delivery Point, Intermediate Aggregation Level Site and National M&E Unit sheets.. The data quality dimensions highlighted in Appendix 1 guide the implementation of the data quality assessment for NTDs. Using these dimensions to meet the aforementioned objectives, each of the three main data collection sheets include two data entry sections: Data Verifications and Systems Assessment. There is also a Dashboard that summarizes the results.

DATA VERIFICATION

Part 1 of the DQA Tool will enable a quantitative comparison of recounted to reported data and a review of the timeliness, completeness and availability of reports for indicators that countries or organizations conducting DQA will decide to review. The purpose of this part of the DQA is to assess if 1) service delivery and intermediate aggregation sites are collecting and reporting data accurately, completely and on time, and 2) whether the data agrees with reported results from other data sources. It is very important to have clear definitions for the indicators before implementing the DQA.

Data verification sections are found as Part 1 in the Service Delivery Point, Intermediate Level Aggregation Sites, and National level M&E Unit sheets in the MS Excel workbook.

In the Service Delivery Point sheets, the section is divided into three subparts, as shown below and in Appendix 2.

1. **Documentation Review:** qualitative description of availability and completeness of PC data sources for the indicators being assessed.

2. **Recounting Reported Results:** for each indicator being assessed, a recount for all the sampled SDPs (typically villages or schools) will be done and results compared with what was reported. It is very important to ensure that source documents used by all the CDDs or teachers within the selected SDP are included in the recount. In addition to using the officially recognized source documents, there are instances when the CDDs or teachers record services they provide using improvised tools such as exercise books. Data recorded using such tools should be included in the recount. Only documented information should be included in the recount (i.e., not verbal reports of the indicator values). In case of discrepancies between reported and recounted results, reasons for the differences will be noted. Recounting of reported results will be done at all the intermediate aggregation levels and at national level. At least two individuals should carry out the recount separately and compare the recounted values, in order to ensure accuracy of the DQA results.

3. **Cross-check reported results with other data sources:** reported results may be cross-checked against other data sources such as school registers and drug inventory. It may not be possible to carry out cross-checks for every indicator since in some cases there might be no data sources for conducting the cross-checks.

The Data Verifications part of the Intermediate Aggregation Level sheets are divided into similar subparts.

DATA MANAGEMENT AND REPORTING SYSTEM ASSESSMENT

Part 2 of the DQA tool will enable qualitative assessment of the relative strengths and weaknesses of functional areas of a data management and reporting system at all levels. The purpose of assessing the data management and reporting system is to identify potential threats to data quality posed by the design and implementation of data management and reporting systems. The systems assessment questions are asked to the persons responsible for managing data and preparing reports at the different levels.

Systems assessment sections are found as Part 2 in the Service Point, Intermediate Level Aggregation Sites, and National level M&E Unit sheets in the MS Excel workbook. The systems assessment section of the DQA tool is presented in Appendix 3 and includes the following five functional areas:

1. **M&E Structure, Functions and Capabilities:** Availability of M&E organizational structure, training plan, and trained data management staff.

2. **Indicator Definitions and Reporting Guidelines:** Availability of indicator definitions and guidelines on reporting i.e. when, where and to whom reports should be sent.

3. **Data Collection and Reporting Forms and Tools:** Availability, appropriateness and utilization of standard data collection and reporting tools.

4. **Data Management Processes:** Availability of data quality controls, data back-up procedures, confidentiality of personal data, and feedback on quality of reported data.

5. **Links with National Reporting System:** Use of / adherence to national reporting system i.e. data tools, reporting channel, reporting deadlines, and sites identification.

Using the Excel DQA tool, scores are generated for each functional area. The scores are an average for all responses to the qualitative questions in each functional area, with each question coded 3 for "yes, completely," 2 for "partly," and 1 for "no, not at all." The scores are intended to be compared across functional areas to guide program implementers on which systems strengthening activities to prioritize. It would be reasonable to consider investing more resources in an area whose score is low compared to that whose score is relatively high.

In order to complete both the Data Verification and Systems Assessment parts of the DQA tool, the assessment team will have to make some observations, do a recount, and ask questions to the appropriate respondents. To ensure that errors caused by data collectors during interviews with respondents are minimized, interviewing techniques are provided in Appendix 4. The emphasis of DQA is to verify the quality of reported data and identify potential challenges to data quality created by the data management and reporting system. It is intended to improve the quality of reported data and systems but not to change already reported data.

DEVELOPING A DQA ACTION PLAN

An integral part of the DQA methodology is the development of an Action Plan. This facilitates addressing any weaknesses that are identified as part of the DQA, by describing the action points, listing the responsible individuals, and the expected timeline to be able to carry out the improvement measures. The development of the action plan is further described below.

Ethical Considerations

The data quality assessment will be conducted with the utmost adherence to the ethical standards of the country. While the assessment teams will require access to treatment records for the purposes of recounting and cross-checking reported results, the assessment team should neither photocopy nor remove documents from sites. In addition, the team shall not accept or solicit directly or indirectly anything of economic value as a gift, gratuity, favor, entertainment or loan that is or may appear to be designed in any manner to influence official conduct, particularly from one who has interests that might be substantially affected by the performance or nonperformance of the assessment team's duty. This provision does not prohibit the acceptance of food and refreshments of insignificant value on infrequent occasions in the ordinary course of a meeting.

Conducting a DQA

Conducting a DQA consists of three phases: making preparations, implementing the assessment, and compiling the results.

PHASE 1: PREPARATION

Preparation for the DQA exercise is a very important phase of conducting the DQA. Preparation for the DQA exercise will involve, among other steps, identifying indicators to be assessed, selection of sites, assembling the field team, and putting together the necessary documentation. It is imperative that different stakeholders are involved in the preparations. The Ministry of Health in collaboration with other partners should participate in deciding the indicators to be assessed, identification of the DQA team, and selection of sites. This will promote buy-in and use of the assessment findings.

The steps to prepare for the DQA can be seen in table 1; these are further described below.

Table 1: Steps to Prepare for DQA

Step	Comment / level
1. Select indicators to be assessed and time period for the PC round being assessed	This should be done as part of the preparation. It is advisable to use the most recent PC round for which treatment reports have been compiled[3].
2. Obtain necessary authorization to conduct the assessment	Authorization could be from National and sub-national / district authorities
3. Prepare needed documentation	
4. Assemble assessment team	
5. Select sites for assessment	Sites should be selected following guidance given in these guidelines. Avoid biased selection of sites.
6. Prepare for on-site visits	Preparations may include timing, constitution of teams, training and logistics

INDICATORS TO BE ASSESSED

The organization or country commissioning the DQA should decide on indicators that should be reviewed (see section on "Specific indicators"). Possible indicators may include:

- Persons treated by drug package (total, or disaggregated by sex or age)
- Persons treated by disease (total, or disaggregated by sex or age)
- Total population in endemic area, or population registered prior to MDA in endemic area
- Population requiring treatment in targeted in endemic area
- Eligible population targeted
- Coverage by drug package (program, epidemiological, therapeutic)
- Coverage by disease (program, epidemiological, therapeutic)
- Number of tablets wasted
- Number of tablets distributed
- Number of tablets remaining
- Availability of medicines 2 weeks before the date of distribution
- Appropriateness of storage facilities

Specific indicators: Specific indicators should be determined based on the purpose of the DQA. If the national program is concerned about reported treatment values for a particular disease, then the persons treated and targeted may be assessed for that particular disease or associated drug package. If the national

[3] Note that in some countries, the time periods for the PC are not set by the central level and/or may vary from one area to another within a given country. Before conducting the DQA, it is imperative to establish the most recent time periods for the PC round for which reports are available.

program wants to understand how the treatment reporting system is functioning for all diseases, then the persons treated can be recounted for all diseases/drug packages. Assessing treatments by disease or drug package may be determined based on the national reporting forms. For example, if data are recorded and aggregated according to drug package, the DQA can focus on drug packages; if by disease, then on disease. Similarly, if the national program is not confident in the quality of reported treatment numbers disaggregated by sex or age, the DQA may assess the number of persons treated disaggregated by sex or age category (such as school-age children).

Alternatively, the national program may be concerned about the supply chain, and so may want to focus on indicators related to drug inventory. If there is concern that one drug may be misreported or misused, then the DQA could focus on this one drug, assessing the number of tablets received, used, and wasted for that particular drug. If there is not concern about one drug versus another, then drugs could be randomly selected to be assessed in the DQA.

Care should be taken not to select too many indicators for the DQA. The same indicators should be used in all the sites selected for a particular DQA (unless a disease is not endemic in all selected sites). However, different indicators may be selected the next time a DQA is implemented.

Number of Indicators: Typically three to four indicators are assessed during data quality assessments. The number may vary based on the focus of the DQA; for example, you may want to focus on the reported treatment values for all diseases treated through PC, in which case the "number of persons treated" by [drug package/disease] for all endemic diseases would be the indicators. Alternatively, you may want to focus on persons treated and coverage for a particular disease, in which case the indicators could be "number of persons treated," "number of eligible persons targeted" or at-risk population/population requiring PC for that disease. Another option is to focus on drugs in the supply chain; the indicators could be the number of tablets received, used, and wasted for a particular drug, or the number of tablets wasted for each drug.

Please note that each data collection sheet of the DQA tool has the capacity for 5 indicators to be assessed. If the DQA will encompass more than 5 indicators, multiple Excel sheets will be required, and indicators should be organized by category (such as persons treated in one sheet, persons targeted in another, and drugs wasted in a third). However, please note that the number of indicators assessed will increase the complexity of the DQA, and time and resources required; therefore, it is recommended that not more than 5 indicators are assessed.

DOCUMENTATION

The assessment team will need the following documentation in preparation for the assessment:

1. A list of service delivery points (i.e., villages, schools or fixed sites) with reported results for the PC round under assessment, related to the indicator(s);
2. Target (or eligible) population for the administrative units at the different levels;
3. A description of the data-collection and reporting system;
4. The templates of the data-collection and reporting forms, including sub-national data aggregation forms;
5. The DQA tool in hard copies. Electronic versions of the tool can be used where possible.
6. The DQA guidelines (this document)
7. Results Verification Form to be used by the survey team to tally the figures obtained during the recount (see Appendix 5).

8. Other available documentation relating to the data management and / reporting systems and a description of the program/project (e.g., a procedures manual)

ASSESSMENT TEAM

The assessment team will be comprised of Ministry of Health staff, staff from any relevant partners, as well as external persons that may be identified to support the exercise. National level M&E staff together with district level NTD staff and implementing partners are expected to participate both in the field activities and coming up with data quality improvement action plans. It is important that at least 2 persons visit each site, so as to facilitate re-counting and tallying of the results. For each site visited, it is necessary to have at least one of the team members be knowledgeable with the national M&E system to conduct the systems assessment. Additionally, the team visiting the SDPs should comprise someone who can communicate in the local language, since some drug distributors may not be able to speak the language spoken in the national capital city.

SELECTION OF DQA SITES

An important step in the DQA exercise is the selection of sites to be included in the assessment. The number of sites selected may vary depending on the objective of the assessment. A key objective of this DQA is to gain understanding on the quality of the data that the NTD program collects and reports. This may not require a statistically reliable estimate of accuracy. Approximately 12 SDPs are sufficient for a DQA. However, a larger number of SDPs can be selected depending on available resources and purpose of the DQA[4]. A multi-stage cluster sampling approach will be employed to select the required sites. The number of stages will be dependent on number of data aggregation levels within a country, as described by the various scenarios below.

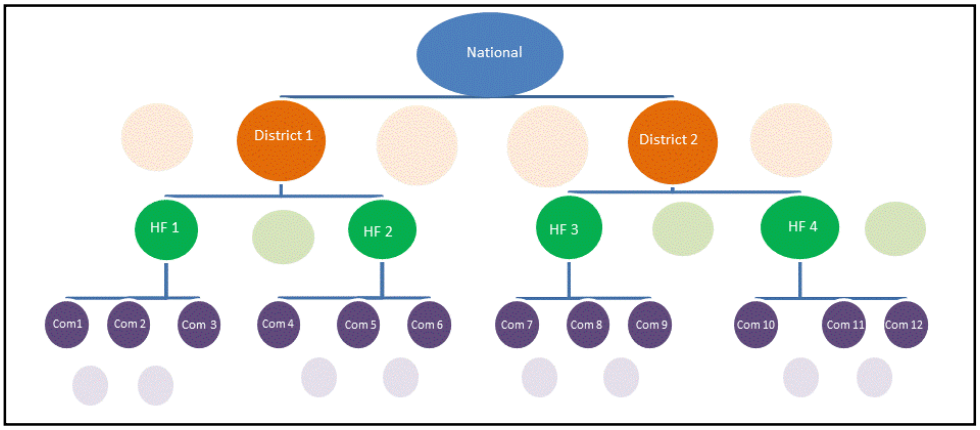
Scenario 1: No intermediate data aggregation level: In cases where data from SDPs are sent directly to the national level without any intermediate aggregation level, districts will serve as the primary sampling units. In this case 4 districts will be selected with 3 SDPs per district, giving a total of 12 SDPs.

Scenario 2: One intermediate data aggregation level: For cases where there is only one intermediate data aggregation level, the selection should follow the same procedure as explained under scenario 1.

Scenario 3: Two intermediate data aggregation levels: In the event of two intermediate data aggregation levels, two primary sampling units (PSUs) then two secondary sampling units (SSUs) will be selected from each of the PSU. Three SDPs should then be selected from each SSU. Figure 4 shows a typical case of DQA site selection for a country with two intermediate data aggregation levels.

[4] Larger sample sizes may be required if the objective of the review is to get precise estimates of the verification factors. This is outside the scope of these guidelines.

Figure 4: DQA Site Selection Example for Two Intermediate Aggregation Levels



In this example, data flow from communities to health facilities to districts to the national level. The community is the Service Delivery Point (SDP), the health facility is Intermediate Aggregation Level 1, the district is Intermediate Aggregation Level 2.

There are six districts in this example, and two of them have been selected as the primary sampling unit (PSU) through Probability Proportional to Size (PPS). Four health facilities (two in each district) have been selected as secondary sampling units (SSUs), and twelve communities (three in each health facility catchment area) have been selected as service delivery points (SDPs). The lighter-shaded areas show aggregation levels and service delivery points that were not selected for this DQA.

Scenario 4: Three intermediate data aggregation levels: For situations where there are three intermediate data aggregation levels, the selection will include two PSUs, one SSU from each PSU, two tertiary sampling units (TSUs) from each SSU and three SDPs from each TSU.

Scenario 5: Four intermediate data aggregation levels:- In the case of four intermediate data aggregation levels, select two PSUs, one SSU from each PSU, one TSU from each SSU, and two units from the lowest level of data aggregation. Three SDPs should then be selected from each of the lowest data aggregation level units.

Table 2 summarizes the possible scenarios for selecting DQA sites.

Table 2: Possible Scenarios for Selecting DQA Sites

Intermediate data aggregation levels	SDPs	PSU	SSU	TSU1	TSU2
None	12	4	-	-	-
One	12	4	-	-	-
Two	12	2	2x2=4	-	-
Three	12	2	1x2=2	2x2=4	-
Four	12	1	1x2=2	1x2=2	2x2=4

Steps to be followed in selecting DQA sites:

1. Preparation of sampling frame: The DQA team should prepare a list of all the primary sampling units (typically districts or regions) where the assessment is taking place. This should be done in consultation with the national program staff. The size of each sampling unit in terms of target population should be obtained. Selection shall be done proportionate to the size of the clusters (see example in Appendix 6). If re-districting has recently occurred, it is important to ensure that the sampling frame matches the year for which the indicators are being assessed.

2. Compute cumulative population for the sampling frame: List all the sampling units in the sampling frame together with their corresponding target population. Listing the units in alphabetic order is recommended as it will not introduce periodicity. (A pattern that occurs regularly in a sampling frame is called periodicity, and this may result in a biased sample.) Cumulative target population should then be computed by cumulatively adding up populations for the units as shown in Appendix 6.

3. Compute a sampling interval: The sampling interval shall be obtained by dividing the total target population by the number of units to be selected.

4. Select the units for assessment: Selecting the units will involve selection of a random start. The random start should be any number between one and the sampling interval inclusive. For example, if the sampling interval is 67, then the random start can take any number from 01 to 67. The random start should be selected using random number tables or a similar random method. The sampling unit whose cumulative population coincides with the random start is selected as the first unit. Proceed to select the required number of units using the formula: random start + sampling interval = second unit; random start + 2 sampling intervals = third unit, etc. The same approach should be used for selecting PSUs, SSUs, and TSUs.

5. Select service delivery sites: Three service delivery points should be randomly selected from each of selected clusters at the lowest disaggregation level. Simple random sampling should be used to select the SDPs. In the case of simple random sampling, all the SDPs have an equal chance of being selected.

Some programs may have data quality concerns that vary across diseases / drug packages. This may necessitate stratifying the districts by diseases or drug packages before selecting the sites for assessment.

There may be situations where the DQA exercise is not intended to get information on a representative sample of the sites. This may happen where for instance a district(s) is suspected of having some serious data quality issues which the DQA is intended to identify. In this case the sites may be selected purposively.

A focal disease such as schistosomiasis presents a situation where a district may include schistosomiasis-endemic areas but not all the SDPs were treated for the disease. Moreover, an area may be endemic for schistosomiasis but not treated in a given year due to the alternate year treatment schedule. Should the DQA data verification include indicators related to schistosomiasis treatment, then stratification of the districts should take the endemicity and treatment schedule into consideration. Caution should be taken to exclude from the sampling frame districts that did not treat schistosomiasis during the year / reference period of the DQA. At the SDP and each data disaggregation level, care should be taken to include in sampling frame only those areas that were treated for schistosomiasis during the PC round being assessed.

PHASE 2: IMPLEMENTATION

Implementation of the DQA exercise will follow the steps outlined in table 3:

Table 3: Steps for Implementing DQA

Step	Comment / level
1. Train field teams	This will be at national and one of the intermediate aggregation levels, such as the district.
2. Finalize field logistics	This will be at the national level. Additional logistical arrangements may have to be made at each of the intermediate data aggregation levels and service delivery points.
3. Assess data management systems at the National M&E Unit	This will be at national level.
4. Trace and verify results from intermediate aggregation site reports at the National M&E Unit	This will be at national level.
5. Assess data aggregation and reporting systems at intermediate aggregation levels	Assessment will be done for the selected sites at all intermediate data aggregation levels. The persons responsible for recording data and preparing summary reports at the different levels should answer the questions during the DQA.
6. Trace and verify results from intermediate aggregation site reports at intermediate aggregation levels	Verification will be conducted for the selected sites at all intermediate data aggregation levels.
7. Assess data collection and reporting systems at service delivery points	This will be at the point of drug distribution, such as a community, health facility, or school.
8. Trace and verify results from source documents at service delivery points	This will be at the point of drug distribution, such as a community, health facility, or school.

TRAINING OF FIELD TEAMS

The field team should be trained before conducting the DQA. Training should include the data collection and reporting tools used at all levels, DQA indicators and their definitions, as well as the DQA tool. It may be helpful to include a session on overview of the NTD program in the event that some field team members may not have participated in NTD activities before. Practical sessions should be conducted using dummy data. To ensure that participants can easily locate on the reporting tools the information required for the recount, the indicators covered in the DQA should be highlighted.

FIELD LOGISTICS

Sufficient numbers of the field forms / documents should be printed before travelling to the field. These materials should be available for training as well as actual DQA exercise and include: sample data recording and reporting tools for all levels, the DQA tool, DQA guidelines (this document), and many copies of the Results Verification Forms for tallying recounted results. Besides the documents, the field teams will also need pens, note books, bags for carrying materials, and calculators. The field teams should be provided with telephone air time to facilitate communication with site contacts and across teams. Additionally, adequate transport should be available for the duration of the field exercise.

ASSESSMENT OF DATA MANAGEMENT SYSTEMS

Starting at the national level, the assessment team should carry out an assessment of the data management system at each level in the NTD reporting system. This will include questions to assess the five functional areas of a data management and reporting system that were outlined in the Methodology section above. An individual experienced with monitoring and evaluation should be responsible for leading the qualitative assessment, and ask the individual responsible for data compilation at each level the guiding questions outlined in Appendices 3 and 4. (These questions are provided for the SDP level in the appendix, but would be applicable to the intermediate aggregation levels as well.). The responses to these guiding questions should be coded for each of the assessment questions in the tool.

TRACE AND VERIFICATION

At each level, the assessment team should review the reported data, carry out a recount of the available data, and compare the counted values with the results already on record that were reported for that level, to verify the reported data. At least two individuals should carry out the recount separately and compare the recounted values, in order to ensure accuracy of the DQA results.

Additionally, the reporting performance should be assessed by determining the availability, completeness, and timeliness of the reported data.

Availability: The percentage of source documents (SDP level) or reports (intermediate aggregation levels) that are able to be retrieved and viewed by the DQA team.

Completeness: The percentage of source documents (SDP level) or reports (intermediate aggregation levels) that have all the information necessary for the indicators being assessed.

Timeliness: The percentage of source documents (SDP level) that have been compiled for the correct assessment period, and the percentage of reports (intermediate aggregation level) that were submitted by the due date.

Lastly, the data may be cross-checked with other sources, if available and appropriate.

Order of visits to the sites: Reports prepared at lower levels are sometimes sent to the higher data aggregation level site with no copies remaining at the lower levels. To avoid situations where the team visits a site and has no reports for comparing the recounted figures, it is recommended to start by visiting the higher data aggregation levels (e.g. district) and then move systematically to the lower levels till you reach the community. While at a higher data aggregation level, the team should record reported indicator values for the lower level sites to be assessed, so as to facilitate comparison between recounted and reported figures while at the lower level.

Prior appointment with site contact persons: As much as possible, appointments should be made with the intended respondents / persons who store data at the different levels before the visit is made. This will reduce non-response and minimize time arising that could arise from failure to meet the respondent at the expected locations. It is helpful to have the intended respondents assemble at a centralized point such as a health facility with their filled data capture and reporting tools, to go through data verification and systems assessment questions. This may have a budget implication as the respondents may require transport refund.

Addressing issues uncovered during the field visit: If any issues are found at any of the data aggregation levels assessed, guidance may be provided during the DQA to facilitate corrective action locally and to be able to address any questions those individuals may have. Additionally, it may be helpful to do the recount (or show how to recount) with individuals responsible for compiling reports, so they can ask questions and have a better understanding of any issues identified.

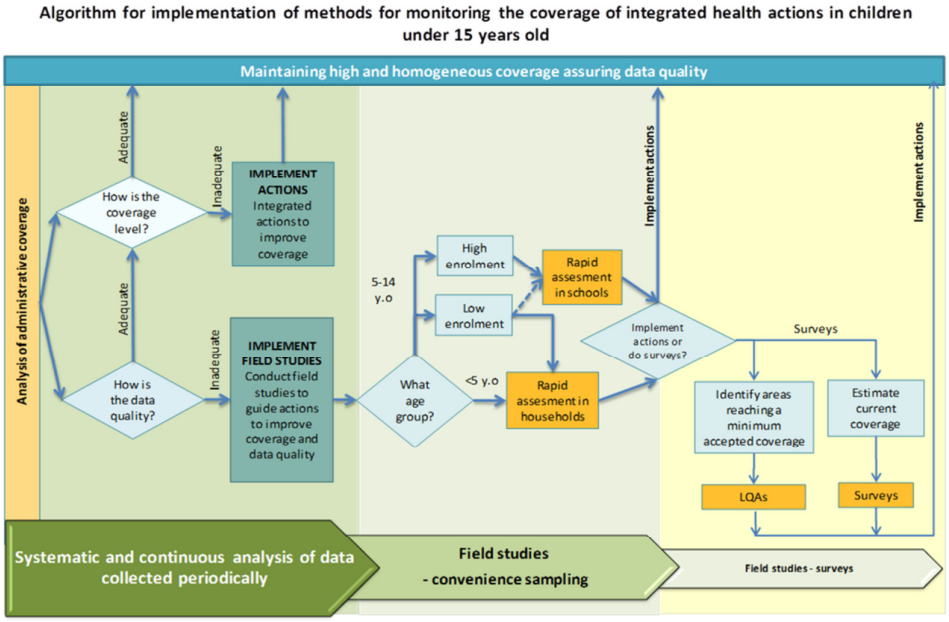
INCORPORATING DQA COMPONENTS INTO SUPPORTIVE SUPERVISION ACTIVITIES AND COVERAGE EVALUATION PROCEDURES

The implementation steps described above are largely applied when DQA is conducted as a comprehensive, distinct exercise. It is possible to incorporate components of the DQA into supportive supervision. This may necessitate using a simpler DQA tool that can be easily completed by program and M&E staff during supervision visits. (This tool is called the DQA-Supportive Supervision Tool.) The likely benefits of incorporating DQA activities into supportive supervision include reduced costs, institutionalization of DQA, flexibility of assessing quality of different indicators (for example, different set of indicators can be chosen during each supervision visit), improved data management capacity arising from data improvement plans and instant feedback. MoHs together with PC implementing partners should be encouraged to conduct DQA as part of supportive supervision considering the likely benefits.

However, this may not eliminate the need for conducting DQA as a comprehensive, distinct exercise. Some PC implementers may decide to conduct DQA as a comprehensive exercise every after PC round, during initial assessment after establishing M&E systems, or in preparation for a formal external data quality audit. The decision to implement DQA as a comprehensive exercise, as part of supportive supervision, or as a combination of the two, will depend on the decision of the NTD programme authorities and NTD stakeholders at national level.

Additionally, it is recommended to consider conducted a DQA before a full more costly coverage evaluation survey. This would enable an earlier identification of factors that explain poor quality of treatment coverage results. The systematic implementation of DQA should be undertaken as part of the preparatory background work before conducting detailed field studies for coverage surveys. (For an example from PAHO depiting how to operationalize this approach, see figure 5 below.)

Figure 5. Algorithm for Implementation of Monitoring Coverage of Integrated Health Actions in Children under 15 Years Old



PHASE 3: COMPILING DQA RESULTS

The third phase of conducting the DQA is to compile the results. The data should be entered into the Excel tool if the initial data collection was performed using paper-based versions of the tool. The Excel tool will generate summary information on the availability, timeliness and completion of the data at the various reporting levels; verification factors to describe the accuracy of the reported data; and evidence the quality of the program's data management and reporting system, such as precision, integrity, and confidentiality. These results should be incorporated into a DQA Action Plan, and should be the basis of drafting preliminary findings and recommendations. After presentation of the preliminary findings, the report should be finalized and the DQA documentation compiled. These steps are synthesized in Table 4, and are further described below.

Table 4: Steps for Compiling DQA Results

Step	Comment / level
1. Interpret DQA results	This will include both the quantitative results, including the verification factor, as well as the qualitative systems assessment results. The consolidation of these results should be done at the national level, by putting together data from all sites (community to national) assessed.
2. Develop DQA Action Plan	All levels, through implementation. The final DQA Action Plan should incorporate the weaknesses, action points, individuals/organizations responsible, and timeline identified at the various levels.
3. Draft preliminary findings and recommendations	The DQA results and action plan should be synthesized into preliminary findings and recommendations.
4. Present preliminary findings	Findings should be presented to MoH, relevant partner staff and other stakeholders.
5. Finalize the DQA report	Report should incorporate input received during the presentation of preliminary findings.
6. Compile final DQA documentation	This will be done at the national level.

INTERPRETING DQA RESULTS

For each of the reporting levels, the following information is compiled:

- *Report completeness, timeliness and availability:* This indicates the proportion of reports that: contained all the required indicator data (completeness), were received by the due date (timeliness), and can be retrieved at the various levels (availability).

- *Verification Factor (VF):* This measures the accuracy of the reported treatment values.

$$VF = \frac{\text{recounted value}}{\text{reported value}} \text{ of the indicator}$$

The VF is calculated as the ratio of the recounted value of the indicator to the reported value. A VF >100% is suggestive of under reporting, while <100% suggests over reporting. On the other hand, a VF that is very close to 100% indicates a high level of accuracy.

For the qualitative results from the data management and reporting systems, scores are generated for each functional area, calculated as an average of the responses to the different questions. The responses are coded 3 for "Yes, completely," 2 for "Partly," and 1 for "No, not at all". Computation of the scores does not include responses coded "N/A" for not applicable. The results are presented using a spider graph for each unit assessed. Scores should be compared across functional areas as a means to prioritize systems strengthening activities.

Key questions when looking at the data:

- **Specific indicators**

- *Is there a particular indicator that has high quality reporting across multiple sites?* For example, the VF of the indicator "# Persons treated with IVM+ALB" is always between 95%-105%; or The reports are always complete for the indicator "# Persons treated with IVM+ALB".

- *Is there a particular indicator that has consistent over/under-reporting across multiple sites?* For example, the VF of the indicator "# ALB tablets distributed" is always >110%; or The reports are often incomplete for the indicator "# of ALB tablets distributed".

- **Specific sites**
  - *Is there a particular site that has high quality reporting across multiple indicators?* For example, the VF for all indicators in Site X is between 95% and 105%; or All the reports were available in Site X for all the indicators.

  - *Is there a particular site that has poor quality reporting across multiple indicators?* For example, the VF for all indicators in Site X is <90% or >110%; or None of the reports were timely in site X.

  - *Is there a particular site that has demonstrated a high quality data reporting system?* For example, the systems assessment in Site X shows high quality (>2.5) for all functional areas (M&E structure, Indicator definitions, Data collection and report forms and tools, Data management processes, Links with national reporting system).

  - *Is there a particular site that has demonstrated a poor quality data reporting system?* For example, the systems assessment in Site X shows low quality (<2.0) for all functional areas (M&E structure, Indicator definitions, Data collection and report forms and tools, Data management processes, Links with national reporting system).

- **Specific level**
  - *Is there a particular level that has high quality reporting across multiple indicators?* For example, the average VF for all indicators across the districts assessed is always between 95% and 105%; or Nearly all the reports were complete in the districts assessed.

  - *Is there a particular level that has poor quality reporting across multiple indicators?* For example, the average VF for all indicators across the districts assessed is always <90% or >110%; or Many of the reports were missing (i.e., not available) in the health posts assessed.

  - *Is there a particular level that has demonstrated a high quality data reporting system?* For example, the districts scored high (>2.5) in the systems functional areas.

  - *Is there a particular level that has demonstrated a poor quality data reporting system?* For example, the health posts scored low in the systems functional areas.

- **Functional Area**
  - *Is there a particular functional area that is performing well?* For example, the Data Management Processes functional area had an average score of 2.8 across the sites assessed.

- *Is there a particular functional area that needs work?* For example, the Links with the National Reporting System functional area had an average score of 1.5 across the sites assessed.

- **Specific issues**
  - *Is there a particular reporting quality issue that is seen across indicators, sites, and/or levels?* For example, Reports were consistently missing (i.e., not available), regardless of the indicator or level.

  - *Is there a particular systems assessment issue that is seen across sites?* For example, none of the respondents at any of the intermediate aggregation sites reported that they received feedback on the quality of their reporting.

DEVELOPING A DQA ACTION PLAN

At each level of DQA implementation, inputs for the DQA Action Plan should be developed based on preliminary findings and discussions. A sample template for the inputs can be seen in Appendix 7. After completion of the assessment, the assessment team will develop an action plan to address any issues identified. The action plan will include:

- Reporting of findings to responsible national authorities – national NTD control program manager, MoH/M&E focal point, etc.
- Recommended action for improvement: indicate associated resources (human, financial and logistical) to support the response
- Timeline to carry out recommendation
- Responsible party
- Benchmark to indicate completion

It is important to note that data that have already been reported should not be changed. Instead, the focus should be on improving the quality of data for the next reporting period.

DRAFTING THE DQA REPORT

Preliminary findings from the DQA results and the DQA Action Plan development should be drafted by the assessment team and incorporated into a preliminary report. The report will summarize the evidence the assessment team collected, identify specific audit findings or gaps related to that evidence, and include recommendations to improve data quality. The report will also include the following summary statistics that are calculated from the system assessment and data verification tools:

1. **Strength of the Data Management and Reporting System** based on a review of the program's data collection and reporting system, including responses to questions on how well the system is designed and implemented. The relative score for each functional area is more important than the exact numerical score. The scores should be compared across functional areas as a means to prioritizing systems strengthening activities.

2. **Accuracy of Reported Data** through the calculation of verification factors (VF) generated from the recounting exercise performed at each level of the reporting system.

3. **Reporting performance** focusing on different data quality dimensions through percentages calculated at the intermediate aggregation level(s) and the M&E Unit.

Whereas the DQA exercise might be intended to identify and address data quality related issues, it is possible that issues related to program implementation are uncovered in the process. It is important to include such issues in the DQA report and bring them to the attention of the program implementation team for appropriate action.

This draft report should be presented to other national NTD program staff who were not involved in the DQA, MOH staff, relevant partners, and other stakeholders. Through a participatory discussion, the findings and recommendations should be finalized, and synthesized into a final report.

COMPILING DQA DOCUMENTATION

The documentation will include:

- Completed tools
- Write-ups of observations, interviews, and conversations with key data quality officials at the M&E Unit, at intermediary reporting locations, and at community level. It is helpful to print the questions on one side of each sheet of the DQA tool and use the second page to record your observations.
- Preliminary findings and draft recommendation notes based on evidence collected in the tools.
- Final Assessment Report.

Conclusion

Implementing a DQA is an excellent opportunity to strengthen the NTD data management and reporting system, and improve data quality. Using multi-stage cluster sampling, a sample of approximately 12 service delivery points will be sufficient to gain understanding on the quality of NTD data, and the ability of the data management and reporting system to generate and report quality data. By quantitatively verifying reported results, the national NTD program can increase its understanding of the accuracy of reported data. The systems assessment serves to identify strengths and weaknesses at the various points within the reporting system. Carrying out the DQA with individuals who are responsible for compiling and reporting data also provides a mechanism for building the capacity of those individuals, when together the assessment team develops the action plan to address any weaknesses identified. The national NTD program can then collaborate with its partners to operationalize the action plan. DQAs can be implemented periodically as distinct exercises, or routinely as part of supportive supervision. DQAs should also be considered for implementation as a preliminary activity prior to implementing potentially more costly evaluation coverage surveys. By strengthening the data quality and data management system for NTDs, national NTD programs, as well as the global NTD stakeholders, will gain increased confidence in the data demonstrating progress towards NTD control and elimination.

Appendix 1: Dimensions of Data Quality[5]

Dimension of Data Quality	Operational Definition
Accuracy	Also known as validity. Accurate data are considered correct: the data measure what they are intended to measure. Accurate data minimize errors (e.g. recording or interview bias, transcription error, sampling error) to a point of being negligible.
Reliability	The data generated by a program's information system are based on protocols and procedures that do not change according to who is using them and when or how often they are used. The data are reliable because they are measured and collected consistently, and if the measurements were to be repeated the same results would be obtained (within minimal margins of error).
Precision	This means that the data have sufficient and appropriate detail. For example, an indicator requires the number of individuals who received PC by sex and age of the individual. An information system lacks precision if it is not designed to record the sex and age of the individual who received the PC.
Completeness	Completeness measures the degree of inclusiveness of reported results. : It represents degree to which information is received about the *complete* list of eligible persons or units and not just a fraction of the list.
Timeliness	Data are timely when the information is available on time before an established date and hour against which reporting is done.
Integrity	Data have integrity when the system used to generate them is protected from deliberate bias or manipulation for political or personal reasons. Integrity may be indicated by an absence of any alteration in data between two updates of a data record. Data integrity is directly influenced by the accuracy and consistency of stored data,
Confidentiality	Confidentiality means that clients are assured that their data will be maintained according to national and/or international standards for data protection and use. This means that personal data are not disclosed inappropriately, and that there is no unintended or unauthorized access to data. Data in hard copy and electronic form are treated with appropriate levels of security (e.g. kept in locked cabinets and in password protected files) and appropriate authentication methods are employed prior to gaining access to the data.

[5] Slightly adapted for PC from "Table 1. Data Quality Dimensions" in the *Data Quality Audit Tool: Guidelines for Implementation*, by K Hardee. Available at: http://www.cpc.unc.edu/measure/publications/ms-08-29/at_download/document, accessed 23 Sept 2013

Appendix 2: Data Verification Part of the DQA Tool, with Guiding Questions – Service Delivery Point (SDP) Level

Name of Site (Service Delivery Point)	
Data aggregation site 1 / Data aggregation site 2 / District	
Indicator(s) Assessed	1)
	2)
	3)
	4)
	5)
Date of Assessment	
Time period of the Preventive Chemotherapy (PC) Round	

Part 1: Data Verifications							
A - Documentation Review:		**Indicator 1**	**Indicator 2**	**Indicator 3**	**Indicator 4**	**Indicator 5**	**COMMENTS**
	Review availability and completeness of all indicator source documents for the selected time period of PC round.						
1	Indicate the source documents for each indicator (Write N/A for indicators that are not applicable to the site being assessed, e.g. an indicator on schistosomiasis in an area that is not endemic for schistosomiasis)	Guiding question (for each indicator): What was the source of data used to prepare a summary report on the PC exercise (*conducted during the period under review)?* *Comment: Write the source for each indicator. It is important to mention the reference period for the assessment.*					
2	Review available source documents for the reporting period being verified. Is there any indication that source documents are missing?	Guiding question (for each indicator): How many Community Drug Distributors (or teachers) were involved in PC activities in this village (or school)? Did each of them use a separate document (register or tally sheet) to record the persons served? Where are those documents stored? How many of those documents are available? *Comment: In some cases each CDD keeps his/her source documents after compiling the reports. Efforts should be made to access documents from all the CDDs. It is possible to encounter a site where source documents are completely missing. The team should nevertheless go ahead with the assessment.*					
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

	If yes, determine how this might have affected reported numbers.	(no relevant guiding question or comment)					
3	Are all available source documents complete?	(no relevant guiding question or comment)					
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
	If no, determine how this might have affected reported numbers.	(no relevant guiding question or comment)					
4	Review the dates on the source documents. Do all dates fall within the time period of the PC round being assessed?	Comment: If source documents do not have dates provided, then indicate "No" and provide an explanation in the Comments.					
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
	If no, determine how this might have affected reported numbers.	(no relevant guiding question or comment)					

B - Recounting reported Results:							
Recount results from source documents, compare the verified numbers to the site reported numbers and explain discrepancies (if any).							
5	Recount the number of people, cases or events recorded during the time period of the PC round by reviewing the *source document*s. **[A]**	(no relevant guiding question or comment)					
6	Copy the number of people, cases or events reported by the site during the PC round under assessment from the site *summary report*. **[B]**	(no relevant guiding question or comment)					
7	Calculate the ratio of recounted to reported numbers. **[A/B]**	(no relevant guiding question or comment)					
8	What are the reasons for the discrepancy (if any) observed (i.e., data entry errors, arithmetic errors, missing source documents, other)?	(no relevant guiding question or comment)					

C - Cross-check reported results with other data sources:				
Cross-checks can be performed by comparing other information sources such as examining separate inventory records documenting the quantities of treatment drugs, to see if these numbers corroborate the reported results.				
9	List the documents used for performing the cross-checks.	(no relevant guiding question or comment)		
10	Describe the cross-checks performed.	(no relevant guiding question or comment)		
11	What are the reasons for the discrepancy (if any) observed?	(no relevant guiding question or comment)		

Appendix 3: Systems Assessment Part of the DQA Tool with Guiding Questions – Service Delivery Point (SDP) Level

Name of Site (Service Delivery Point)	
Data aggregation site 1 / Data aggregation site 2 / District	
Indicator(s) Assessed	**1)**
	2)
	3)
	4)
	5)
Date of Assessment	
Time period of the Preventive Chemotherapy (PC) Round	

Part 2. Systems Assessment		Answer Codes: Yes - completely Partly No - not at all N/A	(Please provide details for each response not coded "Yes - Completely". Detailed responses will help guide strengthening measures).
I - M&E Structure, Functions and Capabilities			
1	The responsibility for recording the delivery of services on source documents is clearly assigned to the relevant staff.	Guiding Question: Is there someone who was assigned the responsibility of recording the services provided during Preventive Chemotherapy (PC) at this unit (village or school)? If yes, who was assigned the responsibility and by who? Were the responsibilities for recording clearly spelled out (ask what the responsibilities are)? How was the assignment effected (i.e. whether in writing or verbally)? *Comment: Probe to find out if there is staff responsible for data management and if an authority such as District NTD Focal Person, Sub-District Supervisor or MoH Central authority assigned the responsibility.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
2	All relevant staff have received training on the data management processes and tools.	Guiding Question: How many persons are responsible for recording data at this service delivery point (village or school – *where applicable)*? How many of these were trained on data recording, summarization or preparing a report on PC activities? What aspects of data recording and reporting did the training cover? *Comment: Probe to establish if the training included areas such as data recording / reporting tools, how to complete the tools, timelines for reporting, where to send reports, quality control, confidentiality etc.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	

3	There are designated staff responsible for reviewing aggregated numbers prior to submission to the next level	Guiding Question: Other than the person(s) responsible for summarizing data or preparing the reports, is there any other person who checks the summarized data / report before it is submitted to the next level? If yes, who is this person?	
		Comment: This person is expected to be different from the one who prepares the report. In some cases the response would be that the same person who prepares the report also reviews it. In this case there is no designated staff responsible for reviewing the aggregated data.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
II- Indicator Definitions and Reporting Guidelines			
The national level has provided guidance (verbal, written, pictorial, job aides, etc.) on …			
4	...*what* they are supposed to report on.	Guiding Question: Has the site (village or school) received any instructions from the national level (whether written or verbal) on what is supposed to be reported on after the PC exercise?	
		Comment: This seeks to know if guidelines were received defining the indicators to be reported on.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
5	… *how* (e.g., in what specific format) reports are to be submitted.	Guiding Question: Has the site (village or school) received any instructions from the national level regarding the format the reports should be submitted? If yes, in what format should the reports be submitted?	
		Comment: (none)	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	

6	… *to whom* the reports should be submitted.	Guiding Question: Has the site (village or school) received any instructions from the national level regarding whom the reports should be sent to? If yes, whom should the reports be sent to?	
		Comment: (none)	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
7	… *when* the reports are due.	Guiding Question: Has the site (village or school) received any instructions from the national level on when the reports should be ready and sent to the next level? If yes, ask to find out the timelines for preparing the reports and submitting them to the next level and compare with national timelines (where available)	
		Comment: (none)	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
III - Data-collection and Reporting Forms and Tools			
8	The M&E Unit has identified standard data recording and reporting forms/tools to be used by the service delivery points	Guiding Question: (none)	
		Comment: This may not be asked to the persons at the SDP level as the information is available at the central M&E unit level. You may only need to establish whether the unit is using the tools.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	

9	….If yes, the standard forms/tools are consistently used by the Service Delivery Point.	Guiding Question: Do all the community drug distributors in this village / school use the standard data capture tools from national level all the time? Do they use the standard reporting forms / tools from the central M&E unit all the time? Are there other data tools other than the standard tools that the CDDs in this village / school use?	
		Comment: Ask this question only if standard forms / tools have been identified by the M&E unit at central level.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
10	Clear instructions have been provided by the M&E Unit on how to complete the data collection and reporting forms/tools.	Guiding Question: Has the unit (village or school) received instructions from the national level on how to fill the data collection and reporting forms / tools? In what form were the instructions provided (probe to find out if they were in form of written guidelines, job aides, verbal, etc)? How clear were the instructions?	
		Comment: In case instructions were not clear probe to find out what was not clear.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
11	All *source documents* and *reporting forms* relevant for measuring the indicator(s) are available for auditing purposes (including dated print-outs in case of computerized system).	Guiding Question: How many source documents (e.g. registers) were used by all the drug distributors within the site (village or school) during PC round under assessment? Did the unit prepare a report / summary data after the PC exercise? Can I have a look at all the source documents used and summary reports (tally sheets) prepared by this site?	
		Comment: Ask to see all the source documents and compare numbers available with what is expected. If a report was prepared, ask to see the report for the unit (village / school). Should site be using a computerized system, ask for print-outs.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	

12	The data collected on the source document has sufficient precision to measure the indicator(s) (i.e., relevant data are collected by sex, age, etc. if the indicator specifies desegregation by these characteristics).	Guiding Question: (none) *Comment: Check whether the source document provides for collecting data with sufficient precision. The team should as well check the data recorded on the source document to assess its precision. Comments should be provided in case of insufficient precision, which could be a result of the tools not providing for enough information or poor documentation by the persons recording data.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
IV- Data Management Processes			
13	There are quality controls in place for compiling data for the summary reports to ensure the accuracy (e.g. detection of transcription errors).	Guiding Question: Are there any steps you take while compiling data to make sure that the summary reports are of good quality? If yes, what are those measures? *Comment: Some examples could include 2 different persons counting numbers served and comparing their results, comparing aggregated against disaggregated values.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
14	If applicable, there are quality controls in place for when data from paper-based forms are entered into a computer to ensure the accuracy of data entry (e.g. edit and/or logic	Guiding Question: What steps does the unit take to make sure that the data entered from paper-based forms / tools into a computer are of good quality? *Comment: Question should only be asked where there is a computerized system.*	
		☐ Yes - completely ☐ Partly	

	checks, post-data entry verification, etc).	☐ No - not at all ☐ N/A	
15	If applicable, there is a written back-up procedure for when data entry or data processing is computerized.	Guiding Question: (none) *Comment: Only applicable where the unit has a computerized system.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
16	….if yes, the latest date of back-up is appropriate given the frequency of update of the computerized system (e.g., back-ups are weekly or monthly).	Guiding Question: (none) *Comment: Only applicable where the unit has a computerized system.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
17	Relevant personal data are maintained according to national or international confidentiality guidelines.	Guiding Question: Are there any steps taken to restrict unauthorized access to source documents (e.g. registers) that contain personal data? If yes, what are the steps (steps may include locking up the documents)? How are the documents containing people's personal data kept while not in use? How do you guard against theft or loss of the documents? *Comment: (none)*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	

18	The recording and reporting system avoids double counting people within and across Service Delivery Points (e.g., a person receiving the same service twice in a reporting period, a person registered as receiving the same service in two different locations, etc).	Guiding Question: Are there any measures taken to detect and avoid situations of recording and reporting cases where a person may receive the service more than once within this unit (village or school) or may receive the same service from this unit and some other unit? If yes, what are the measures?	
		Comment: (none)	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
V - Links with National Reporting System			
19	When available, the relevant national forms/tools are used for data-collection and reporting.	Guiding Question: (none)	
		Comment: This is only applicable in countries that have national forms / tools. The national tools are normally issued by the Ministry of Health. One may need not ask any question but rather examine the available recording and reporting forms / tools (this should have already been done under "Data Collection and Reporting Tools and Forms" section above, to establish whether they are the national forms / tools.	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
20	When applicable, data are reported through a single channel of the national information	Guiding Question: Where and how do you send your report?	
		Comment: Should be asked only where a national information system for NTDs exists. May need to probe to establish if the national system is followed.	

	systems.	☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
21	Reporting deadlines are harmonized with the relevant timelines of the National NTD Program (e.g., cut-off dates for reporting).	Guiding Question: Were you given by the national level deadlines within which to prepare your reports and submit them after the most recent PC round? If yes, what are the deadlines? (NOTE: It is possible that this information could have already been obtained while discussing question 7 above. In this case you need not ask the question again). *Comment: Should be asked only where a national information system for NTDs exists. The field team needs to be conversant with the national program's timelines. Compare deadlines with the national NTD program deadlines.*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	
22	The service sites are identified using ID numbers that follow a national system.	Guiding Question: (none) *Comment: This is relevant to countries whose national information system uses IDs for service delivery points (villages and schools).*	
		☐ Yes - completely ☐ Partly ☐ No - not at all ☐ N/A	

Appendix 4: Interviewing Techniques

In order to fill the DQA tools, the assessment team will have to conduct interviews with staff involved in data management and reporting at the different levels. The quality of data collected by the assessment team can be greatly affected by the interviewer. Information contained in this section is intended to minimize data errors caused by interviewer.

1. Building Rapport

- Introduce yourself and the purpose of your visit. If you have moved to the community with district officials that are known to the community members then it may be recommended for the district officials to introduce the team. Likewise if you move to the district with MoH officials then it may be advisable for the MoH officials to introduce the team.

- Take into consideration your target respondents and make efforts to connect with them. You need to dress appropriately and conduct yourself in a manner that will not cause discomfort or embarrassment.

- Give the respondent an opportunity to ask questions he/she may have about the assessment before you start the interview.

- Seek the respondent's consent before starting the interview.

- Most of the data collected during the assessment may not be sensitive. However it is important to observe privacy and confidentiality. If a respondent is interviewed in the presence of his/her supervisor, he/she may not openly provide some information.

2. Conducting Interviews

- Use the list of guiding questions while asking questions to the respondents. The wording of some of the questions on the DQA tool might be confusing to the respondents if they are asked exactly as they appear on the tool.

- Do not suggest answers to the respondents.

- Do not conduct the interview in a hurry. The assessment has a number of questions that require detailed explanation and respondents should be allowed enough time to explain.

- Have a positive approach and do not blame the respondents for any weaknesses or gaps that you may identify. Stress the fact that the assessment is intended to identify weaknesses that should be a focus for improvement rather than catch errant staff.

- Speak slowly and clearly.

- If the respondent does not understand the question then you should repeat the question without necessarily paraphrasing it. If after repeating the question the respondent still doesn't understand it, then you need to change the wording of the question without altering the meaning.

- If the respondent's answer is incomplete or inadequate, the interviewer should probe for clarification and elaboration in a non-directive way i.e. a way that does not influence the content of the answers that result. Examples of non-directive probes include:

- Tell me more about that.

- Anything else?

3. Ending the Interview

- Thank the respondent.

- Ask the respondent if he/she has any questions about the assessment.

Appendix 5: Results Verification Form

Country: …….. District: …….

Name of Site: ……. Level (e.g. village or parish): ……..

	Data Source of recounting: write the data source in the gray box below the indicator. **Recounted value:** In each row, write the value that you recounted for that page/sheet number or lower aggregation site. Then, sum the recounted values for all the recounted results, and compare the recounted value to the reported value.				
	Indicator 1	Indicator 2	Indicator 3	Indicator 4	Indicator 5
Page or sheet number (if data source is a register) ***OR*** Lower aggregation site (if data source is summary reports from lower level)					
Total					

Appendix 6: Example of Selecting 4 Clusters with Probability Proportionate to Size

District	Population	Cumulative Population	Sampled units
Budumbuli	1345	1345	
Kasolokamponye	4435	5780	3642
Kifumbira	854	6634	
Kikubamutwe	4504	11,138	8330
Kyanja	6623	17,761	13,018
Mwanamugimu	992	18,753	17,706
Total	**18,753**		

Alphabetical order

Target populated added cumulatively

- Sampling interval =18,753/ 4 =4688
- Random start =3642 (randomly selected number between 1 and 4688
- First cluster selected coincides with random start (Kasolokamponye)
- Second cluster will be 3642+4688 = 8330 (Kikubamutwe), etc.

Appendix 7. Inputs for DQA Action Plan

Based on the findings of the assessment at each site, please describe any challenges to data quality identified and recommended strengthening measures, with an estimate of the length of time the improvement measure could take.				
	Identified Weaknesses	**Description of Action Point**	**Responsible(s)**	**Timeline**
1				
2				
3				
4				