# Dispensers for Safe Water: Back Check Draft Protocol

## Contents



## Acronyms and Abbreviations

| | |
|---|---|
| FMT: | Data Collection Team |
| DSW: | Dispensers for Safe Water |
| FCR: | Free Chlorine Residue |
| FMT: | Field Monitoring Team |
| FO: | Field Officer |
| KPI: | Key Performance Indicator |
| MLIS: | Monitoring Learning and Information Systems |
| PDA: | Program Data Analysis |
| TCR: | Total Chlorine Residue |

## 1. Background

In every bi-monthly monitoring period, MLIS visits households that use 1.5% of the total water points serviced by a DSW office. Approximately eight households are randomly selected and visited in the surrounding area of each of the selected water points. The data collected is then analyzed and the results used to inform DSW on its KPIs such as proportion of households chlorinating their drinking water, dispenser functionality, and promoter performance. It is therefore important that data collected and used for this analysis is accurate and that customary protocol for data collection is adhered to by the Field Officer (FO) conducting the monthly evaluations.

Back-checks are a quality control method implemented with the goal of verifying the quality and legitimacy of data collected during a survey. To ensure that the standard is met and data collected are accurate, MLIS will from time to time conduct routine random back-checks during the data collection round and targeted back-checks to selected water points based on the result of the monitoring data. Throughout the bi-monthly monitoring data collection round, a back-check team will conduct phone based interviews with a randomly selected subset of households for which data was collected by M&E FOs using a short subset of main survey questionnaire used, otherwise known as a back-check survey.

This document provides the step by step approach on how to coordinate, sample and design a back-check, including;

- Purpose of back-checks
- How to coordinate a back-check
- Forms of back-checks
- Where will be back-checks be conducted
- When will such back-checks be conducted
- How the back-check will be conducted
- Analysis of back-check data and
- Communication of back check results

### Purpose of back-checks

- Assess effectiveness of the survey instrument
- Detect fraud in the data collection process
- Verify adherence to set data collection protocol/standards e.g. use of infield randomization protocol
- Verify the accuracy of the data collected and identify sources of any irregularities in the data
- Identify areas where further emphasis should be put during training or where retraining of data collection staff is needed
- Performance evaluation - This will be used to fairly and objectively evaluate the performance of field teams based on accuracy of data collected that will initiate discussions about areas that are well done and those poorly done

### Forms of back-checks

There are two ways in which the back-checks for DSW will be conducted.

1. Routine random back-checks
2. Targeted back-checks

## 2. Routine Random Back-checks

### 2.1 Designing and Coordinating Routine Random Back-checks

Routine random back-checks will be performed as soon as possible and regularly during the data collection round. Back-check questions will be drawn from the original survey questionnaire and they can be changed regularly to ensure that ***enumerators do not know what questions will be audited during a certain back-check round.*** Back-check questions will ask straightforward information with no expected variation or room for error.

### 2.2 Sampling for routine random back-checks

Random back-checks will be conducted in three (3) rounds in a single bi-monthly monitoring data collection period; for the 1st & 2nd weeks, 3rd & 4th weeks, and 5th to 8th weeks of data collection. Sampling will be stratified by country and data collection officers and the sampling frame will be the data already submitted in the server. Overall, back-checks will be performed on 15% of all promoter surveys or 20 promoters, whichever is higher and 15% of all community surveys.

- **Number of Water points randomized for bi- monthly monitoring[1] = $N_{wtprand}$**
- **Number of promoters to be sampled for back-check = 15%* $N_{wtprand}$ = $n_{pbc}$**
- **Expected number of Household to be interviewed in the bi-monthly monitoring[2] = $N_{wtprand}$*4 = $Hh_{rand}$**
- **Number of Households to be sampled for back-check = 15%* $Hh_{rand}$= $n_{Hhbc}$**

**Table 1: Sample size description**

| | | Kenya | Uganda | Malawi |
|---|---|---|---|---|
| **Monitoring** | Expected # of promoters | 205 | 82 | 82 |
| | Expected # households | 820 | 328 | 328 |
| **Random backcheck** | 15% of promoters or 20, whichever is more | 31 | 15 | 15 |
| | 15% of households | 123 | 49 | 49 |

Below is the description of the back-check rounds per monitoring data collection period:

- **Round 1: Upon conclusion of the 1st & 2nd data collection weeks:** In the 1st day of the 3rd data collection week, the DSW Data Analyst will sample 15% of community and promoter survey from the data already submitted in the ODK server for weeks 1 and 2; stratified by number of enumerators. The sample list will be shared with the FMT Associates for each country to administer the back-checks in the 2nd and the 3rd day of week three of data collection. By the 5th day of the third week, the Data Analyst will share the back-check findings.

[1] From bi-monthly monitoring randomization list
[2] As per the bi-monthly monitoring protocol a monitor interviews 4 households per sampled water point

- **Round 2: For the data collected in the 3rd and 4th week.** The sampling will be conducted in the 5th week of data collection for the data collected in the 3rd and 4th week: In the 1st day of the 5th week, the DSW Data Analyst will another sample 15% of community and promoter survey from the data submitted in the ODK server, ***but collected in the 3rd and 4th week only,*** stratified by number of enumerators. The FMT Associate will administer the back-checks between the 2nd and the 3rd day of the 5th week of data collection while the Data Analyst is expected to share the findings by the 5th day of the fifth data collection week.
- **Round 3: For the data collected in the 5th to 8th week.** In the 1st day upon lapse of the 8th week of data collection, the DSW Data Analyst will sample 15% of community and promoter survey from the data already in the ODK server, ***but collected in the 5rd, 6th, 7th and 8th week only,*** stratified by number of enumerators. The FMT Associate will administer the back-checks between the 2nd and the 3rd day of the 9th week of data collection and findings shared in the 5th day of the 9th week. In addition, the Analyst should share consolidated analysis for all the three rounds of back-check data collection to inform the next data collection round and training needs before end of the second month of data collection.

| Data collection period | Round | Promoter backcheck sample size | Household backcheck sample size |
|---|---|---|---|
| **1st and 2nd week** | Round 1 | **15% * HHs** | **15% * HHs** |
| **3rd and 4th week** | Round 2 | **15% * HHs** | **15% * HHs** |
| **5th to last week** | Round 3 | **15% * HHs** | **15% * HHs** |
| **Total** | | Kenya: 31<br>Uganda/Malawi: 12 | Kenya: 123<br>Uganda/Malawi: 49 |

See Annex 1 for a detailed implementation plan for Jan-Feb 2020 monitoring period

**Replacement of water points**

Sampling should prioritize data where contact information was shared. The Associate Analyst will share additional sample list to act as replacement incase the respondent cannot be reached over the phone. The replacement list should be exhaustive enough such that priority is given to respondents as they are enumerated in the sample list. The replacement should be performed until the sample size is achieved.

# 3. Targeted Back-checks

## 3.1 Designing and Coordinating Targeted Back-checks

Targeted back-check will be conducted at the end of a bi-monthly monitoring period in cases where there is unexplained anomalies in the data geared towards establishing the course/source of the anomaly. Since chlorine adoption is one of the key indicator for program performance, the advocated approach is in using adoption rates to check for glitches in the data. There are three cases that will be investigated:

1) When total adoption rates for one program differ significantly from the average adoption of the two-consecutive bi-monthly periods prior to the current period
2) When the free chlorine adoption rate differs significantly or from the total chlorine adoption rate
3) Cases of fluctuating adoption rates within a program

### 3.2 Determination of Outlier Adoption

To determine cases that are worth investigation/back-check, the following analysis will be undertaken by Program Data Analysis (PDA) team:

a) Calculate adoption per program and water point
b) Determine the interquartile range (Q3-Q1) of the program and water point adoption rates.[3]
c) Determine the first boundary between ***Q1-1.5(Q3-Q1) and Q3+1.5(Q3-Q1)*** from program adoption
d) Determine the second boundary between ***Q1-3(Q3-Q1) and Q3+3(Q3-Q1)*** from program adoption
e) (Repeat the same for the difference in TCR and FCR adoption rates but using the generated difference)

Usually, adoption rate is explained by several factors. Key among these factors include: **where the households got the water** that was tested for presence of chlorine, **functionality of the dispenser** and whether **chlorine was present** at the time of the interview, **adoption boosting and promotional activities conducted by promoters**, and other cases such an outbreak of waterborne disease.

Before an office is selected for targeted back-check, the PDA team will analyze all the above factors to attempt to explain anomalies in adoption rate. The possible outcome of this analysis could be:

1. The "*outlier adoption"* is explained by these factors: in such a case the result of the analysis will be shared with the DL team for purposes of explaining the results when sharing with the program and management team.
2. Where such factors do not explain the "*outlier adoption"*, and the adoption rate or the difference in adoption lies outside the second boundary (point d above) such case will be categorized as major outlier and call for immediate back check by the Associate Data collection.
3. Where such factors do not explain the "*outlier adoption"*, and the adoption rate or the difference in adoption lies outside the first boundary (point c above) but within the second boundary such case will be categorized as minor outlier. If an office is categorized as a minor outlier for three consecutive bi-monthly periods, then such will also call for back-check by either the associate or his/her designate.
    a. In addition to categorization by adoption rates, changes in adoption rates for two consecutive bi-monthly periods will be examined. Where such changes are statistically significant at 95% LOS (but with no evidence from the data explaining the change) and this happens for two consecutive periods, then such office level adoption will be treated a minor outlier and will be evaluated for back-check together with case 3 above.

### 3.3 Selection of water points for Targeted Back-check

The above analysis and classification will be done at country level, i.e. in the analysis to find out if there is an outlier in the data, only offices within a country will be considered:

[3] Q1 is defined as the upper bound of the lower 25% of the data while Q3 is defined as the lower bound of the upper 25% of the data

- Where the TCR adoption rates are above the upper bounds (as defined above), water points whose TCR adoption is in the upper percentile (within the program) will be visited for back-check. If on the other hand the TCR adoption is below the lower bound, water points whose adoption is in the lower percentile will be visited for back-check.
- Where the will be a huge difference between TCR and FCR adoption that cannot be explained by the data, the water points with lower percentile in FCR adoption will be visited. If the difference in TCR and FCR adoption is so small that is lies below the lower bound, then water-points with upper percentile in FCR adoption will be visited.

Households that were visited in the selected water-points will be revisited in the back-check activity. Before visiting the households, the associate or the person doing the back-check will verify that the infield randomization was done according to the protocol. Back-check will cover the below areas:

a) FO properly used the infield randomization protocol (Examine the households visited are the same as those selected by the infield randomization)
b) Households visited use the water point with the chlorine dispenser
c) FO made the visits to the households
d) FO tested the water for TCR and FCR
e) Result of the water test.

### 3.4 Timelines for Targeted Back-checks

The DSW Data Analyst will share the result of the bi-monthly analysis by each 7$^{th}$ day of the next month. In cases of presence of "major outliers" or "minor outliers" in the key variables, then FMT will be immediately be informed for preparation purposes and additional analysis conducted. The Data Analyst will share results by the 9$^{th}$ day of that month. If there is no data that explains the outlier adoption, then back-check will be conducted to targeted water points from the 11$^{th}$ to the 15$^{th}$ Day of the month.

Data cleaning for targeted back check will be prioritized and data availed to the analysis team 2 days after completion of the back check activity. Similarly, the analysis team will provide the analysis to FMT manager with clear conclusion from the back-check analysis.

## 4. Analyzing Back-Checks Data

Analysis of random back-checks will be conducted after every round of back-check data collection comparing the back-check data to the original survey data and report shared to the FMT team for action. Ideally, back-check analysis should not be time consuming but should be prompt analysis for quick corrective actions. As such, the data analysis team will develop a reproducible Stata command or dofile that produces output comparing back-check data with original survey data as well as enumerator data capture stability checks.

## 5. Using Back-Checks Data

The Field Monitoring Team (FMT) in liaison with analysis team will organize for a meeting to discuss the back check results and align their understanding of the findings. After the meeting, the following actions will be taken based on the findings.

1. **Modification of survey questions:** Errors that emanate as a result of a problem with the questionnaire or administration should be rephrased. MLE's delivery unit (FMT and Analysis) will organize for a meeting with Strategy unit to discuss the issues and the best was to rephrase the questions.
2. **Retraining of monitors:** Monitors with an error rate above 10% should be scheduled for re training. The training will focus on the specific survey questions where the error was drawn from.
3. **Field revisits:** If there surfaces a >40% discrepancy in the back check, the household should be revisited by both the monitor and associate for purposes of determining the nature and cause of the errors. If the error arises on account of the monitor, the household is to be re-surveyed and all surveys done by the monitor in the said batch is to be audited. If one or more survey has 40% or more discrepancy, the monitor's contract will be terminated after following the due HR processes for such an offence. All surveys with 20% or more discrepancy are to be re-done.

Annnex 1

Summary of random back-check to be conducted

| | | Ke | UG | Mlw | Data collection Weeks | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of waterpoints monitored per bi-monthly period | | | | | Wk 1 | Wk 2 | Wk 3 | Wk 4 | Wk 5 | Wk 6 | Wk 7 | Wk 8 | Wk 9 |
| No of households visited per monitoring period (assume 8 households per wpt) | | | | | | | | | | | | | |
| Total no of promoters randomized for random back-check | | | | | | | | | | | | | |
| Total number of households sampled for random back-check | | | | | | | | | | | | | |
| 1. No random back-check conducted in Round 1 | Promoter | | | | | | Round1 | | | | | | |
| | Community | | | | | | | | | | | | |
| 2. No random back-check conducted in Round 2 | Promoter | | | | | | | | Round 2 | | | | |
| | Community | | | | | | | | | | | | |
| 3. No random back-check conducted in Round 3 | Promoter | | | | | | | | | | | | Round 3 |
| | Community | | | | | | | | | | | | |