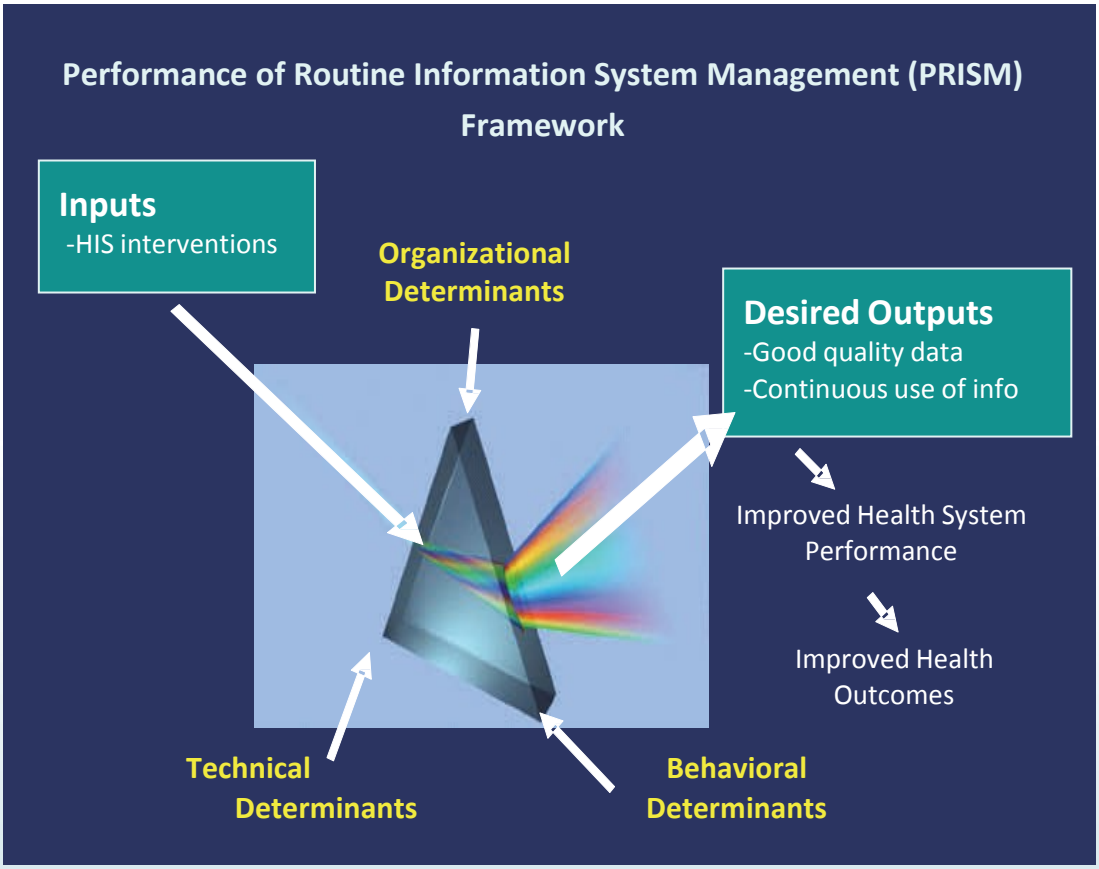
RHIS CURRICULUM
9.3.2

PRISM Tools

User Guide



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MEASURE EVALUATION is funded by the U.S. Agency for International Development (USAID) through cooperative agreement GHA-A-00-08-00003-00 and is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with Futures Group, ICF International, John Snow, Inc., Management Sciences for Health, and Tulane University. The views expressed in this manual do not necessarily reflect the views of USAID or the United States government.

MS-12-51 March 2012

MEASURE Evaluation strengthens the capacity of host-country programs to collect and use population and health data. We are a key component of the United States Agency for International Development's (USAID) Monitoring and Evaluation to Assess and Use Results (MEASURE) framework and we promote a continuous cycle of data demand, collection, analysis and utilization to improve population health conditions.

MEASURE Evaluation fosters demand for effective program monitoring and evaluation. We seek to empower our partners as they improve family planning, maternal and child health, nutrition and prevent HIV/AIDS, STDs and other infectious diseases worldwide.

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Acknowledgments

We would like to acknowledge the PRISM User Guide reviewers, Stephanie Mullen, Principal Investigator for MEASURE/JSI, and Beatriz Plaza, Research Associate from MEASURE UNC, for their efforts and useful comments to revise and improve the manuscript.

Special thanks to Andrea Dickson for editing the manuscript. I acknowledge the contribution of Traore Moussah, who has developed the PRISM DEAT, while Alimou Barry introduced some new commands to fill empty spaces provided for additional data collection under PRISM DEAT. Theo Lippeveld provided overall guidance for preparing this manuscript.

Anwer Aqil

List of Acronyms

ANC	Antenatal care
ARI	Acute respiratory infection
DCI	Data collection instruments
DDIU	Data demand and information use
DHIS	District health information system
DSS	Decision support system
EPI	Expanded program of immunization
HIS	Health information system
HIV and AIDS	Human immunodeficiency virus and Acquired immunodeficiency syndrome
HMIS	Health management information system
IT	Information technology
LQAS	Lot quality assurance sampling
MOH	Ministry of Health
OPD	Outpatient department
PAHO	Pan-American Health Organization
PRISM	Performance of routine information system management
RHINO	Routine Health Information Network
RHIS	Routine health information system
SAVVY	Sentinel vital events registration with verbal autopsies
VCT	Voluntary counseling and testing
WHO	World Health Organization

Table of contents

Introduction and Overview

The PRISM framework and its tools have been used in more than ten countries in different parts of the world, from Asia to Africa, and from the Caribbean to Latin America. The user guide meets an urgent need, which has been identified in the field, for capacity building in routine health information systems (RHIS) to help professionals use RHIS more effectively.

What is the purpose of the User Guide?

To provide a rapid transfer of knowledge and skills for using PRISM tools at both the national and sub-national levels.

Objectives of the User Guide:

After reading the user guide, participants will be able to:

- List various PRISM tools and their usage
- Describe the meaning of the each question in the PRISM tools
- Apply PRISM tools in the field
- Enter and analyze the data using the PRISM Data Entry and Analysis Tool (DEAT)
- Interpret and write a report on the PRISM tools findings

Who is the target audience for this User Guide?

This user guide is designed for government and NGO professionals and RHIS consultants who want to design, assess, strengthen, and evaluate the RHIS performance at national as well as sub-national levels.

What content does the User Guide cover?

This user guide is based on the PRISM conceptual framework[1] for designing, strengthening, and evaluating RHIS performance. Performance of Routine Information System Management (PRISM), a conceptual framework developed by MEASURE Evaluation and John Snow, Inc., acknowledges the broader context in which RHIS's operate. It emphasizes strengthening RHIS performance through better data quality and improved information use. PRISM broadens the analysis of RHIS performance to include three key categories of determinants that affect performance:

[1] Aqil, A., Lippeveld, T, Hozumi, D., PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems, Health Policy and Planning 2009;1–12

- Behavioral determinants – the knowledge, skills, attitudes, values, and motivation of the people who collect and use data;
- Technical determinants – data collection forms, processes, systems, and methods; and
- Organizational determinants – information culture, structure, resources, and roles and responsibilities of key contributors at each level of the health system.

The PRISM toolset includes the following data collection tools and instructions on how to use them:

- **Performance Diagnostic Tool:** The primary toolset component, the performance diagnostic tool determines the overall level of RHIS performance, i.e. the level of data quality and use of information. It captures the technical determinants of RHIS performance, such as level of complexity of data collection forms and user-friendliness of information technology.
- **Overview and Facility/Office Checklist:** This tool examines technical determinants, such as the structure and design of existing information systems in the health sector, information flows, and interaction between different information systems. It allows users to understand the availability and status of RHIS resources necessary for RHIS implementation at the facility and district levels.
- **Organizational and Behavioral Assessment Tool (OBAT):** This tool identifies behavioral and organizational factors affecting RHIS performance. Behavioral determinants include level of data demand, motivation, confidence, task competence, and problem-solving skills. Organizational factors include level of promotion of a culture of information, and the existence (or not) of a reward system.
- **Management Assessment Tool (MAT):** This tool is designed to take rapid stock of the RHIS management practices and aid in developing recommendations for better management.

How is the User Guide organized?

There are chapters in the PRISM user guide. The first chapter starts with a description of the PRISM framework and its tools. Next, each tool is described in a separate chapter (chapters two through six). Chapters on each tool begin with a description of the tool's uses, followed by a short description of the tool. Later, the chapters describe the strengths and limitations of each tool. The chapters end by explaining how to ask each question, review record or make observations in the tools using example of a filled tool.

Chapter seven provides a summary of the data collected from each of the tools. A methodology for applying the tools is presented in chapter eight. Chapter nine covers how to use the PRISM data entry and analysis tool. The final chapter deals with how to interpret the findings.

How do I use the PRISM User Guide?

The User Guide is intended to be easy to use, with a stand alone chapter dedicated to each tool. For a new user, we would suggest starting with the chapter on the PRISM framework, which provides a theoretical basis for developing the tools. However, for those who are familiar with the PRISM frame-

work and its tools, any chapter of interest could be an appropriate starting point. Those who are more interested in how to apply the tools would benefit from starting with the methodology introduced in chapter nine. The last chapter is an essential read for understanding how to prepare a report after completing use of the tools.

Chapter I:
Performance of Routine Information System Management Framework

Chapter I: Performance of Routine Information System Management Framework

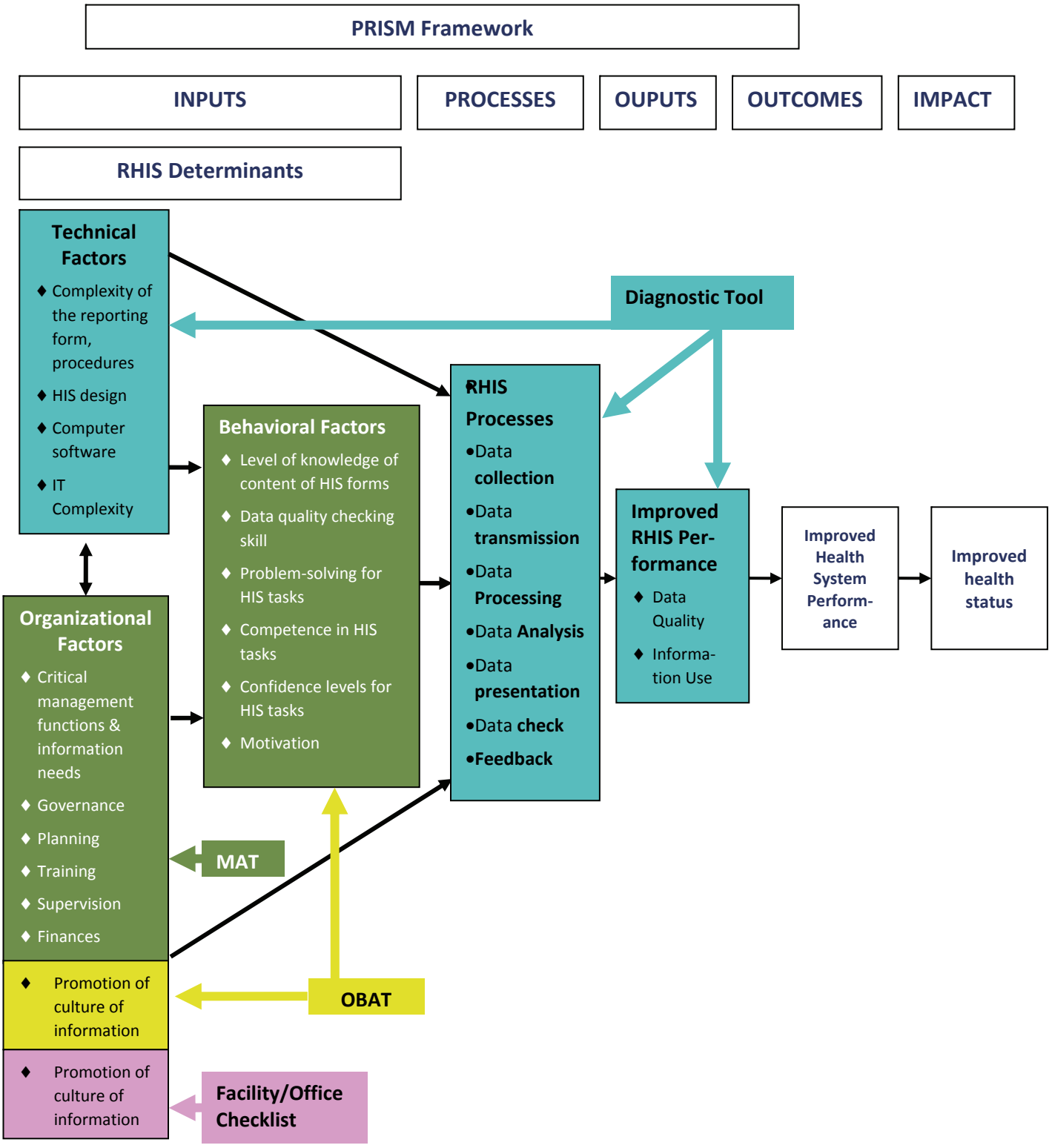
The Performance of Routine Information System Management (PRISM) Framework[2] (Figure 1) defines the various components of the routine health information system and their linkages to produce better quality data and continuous use of information, leading to better health system performance and, consequently, better health outcomes. The PRISM framework asserts that RHIS performance (better quality data and continuous use of information) is a function of better RHIS processes and their behavioral, technical, and organizational determinants.

Organizations develop information systems to meet their information needs, promote evidence-based decision-making,[3] manage knowledge, create transparency, and apply good governance. Thus, it is a management responsibility to maintain and sustain the information system. It implies that the information system design should take into consideration environmental factors such as availability of transportation or roads, electricity, and telephone or wireless connectivity. The organization might not have the capacity or resources to affect these environmental constraints but they should still be examined during the planning and development of an information system. The same is true in the case of an organization's hierarchical structure where the role and responsibilities are difficult to change. Therefore, the PRISM framework raises the important question of whether an information system is appropriately designed to work within environmental, organizational, and technical constraints to produce quality data and information use.

Organizational determinants are perceived as more amenable to change by senior management or RHIS implementers. The commitment and support of senior management is expressed through the vision statement and establishment and maintenance of support services such as planning, training, supervision, human resources, logistics, and finances that are required to run the information system (Figure 1). However, it is taken for granted that by establishing the information system, a culture of information will be created or strengthened. The culture of information is defined as "the capacity and control to promote values and beliefs among members of an organization for collection, analysis and use of information to accomplish its goals and mission." The way that management and staff value generated information and evidence-based decision making would be enhanced. A culture of information will reinforce transparency and improve health system performance, consequently leading to better health status of the communities served. The PRISM framework acts as a reality check for assessing whether the organizational mechanisms are in place for producing the desired results. It operationalizes the culture of information concept and explores the level of existence of a culture of information. Further, it indicates the commitment and support of upper management for enhancing an information system.

[2] Aqil, A., Lippeveld, T, Hozumi, D., PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems, Health Policy and Planning 2009;1–12

[3] HMN Secretariat. 2006. HMN framework and standards for country health information systems. 1st edition. Geneva: Health Metrics Network/World Health Organization.


PRISM Framework
INPUTS
PROCESSES
OUPUTS
OUTCOMES
IMPACT
RHIS Determinants
Technical Factors
♦ Complexity of the reporting form, procedures
♦ HIS design
♦ Computer software
♦ IT Complexity
Diagnostic Tool
Behavioral Factors
♦ Level of knowledge of content of HIS forms
♦ Data quality checking skill
♦ Problem-solving for HIS tasks
♦ Competence in HIS tasks
♦ Confidence levels for HIS tasks
♦ Motivation
RHIS Processes
•Data collection
•Data transmission
•Data Processing
•Data Analysis
•Data presentation
•Data check
•Feedback
Improved RHIS Per-formance
♦ Data Quality
♦ Informa-tion Use
Improved Health System Perform-ance
Improved health status
Organizational Factors
♦ Critical management functions & information needs
♦ Governance
♦ Planning
♦ Training
♦ Supervision
♦ Finances
MAT
♦ Promotion of culture of information
OBAT
♦ Promotion of culture of information
Facility/Office Checklist

Behavioral determinants (Figure 1) influencing RHIS performance are multiple. Motivating the members of an organization remains a challenge despite giving them training on data collection registers and reporting forms. Poor attitudes such as perceiving data collection as a useless activity or waste of care provider time also hinders performing RHIS tasks. Knowledge and skills for data processing, analysis, and interpretation are usually not given due attention and affect the ability to use information.

Technical determinants are often confused with behavioral determinants, especially related to RHIS knowledge and skills. Technical determinants are defined as those factors that are related to information technology or need special know-how, such as software development for data processing and analysis, development of indicators, designing data collection forms, and procedural manuals. If data collection forms are complex to fill in, indicators are irrelevant. If computer software is not user-friendly, it affects confidence levels and motivation of data collectors. When software does not process data properly and in a timely manner, and resulting analyses do not provide meaningful conclusions for decision making, these factors all affect information use. Therefore, technical determinants might affect performance directly or through behavioral determinants. Technical determinants can also be affected by organizational determinants such as when an organization might not be ready for computerizing its information system and therefore still uses a paper system.

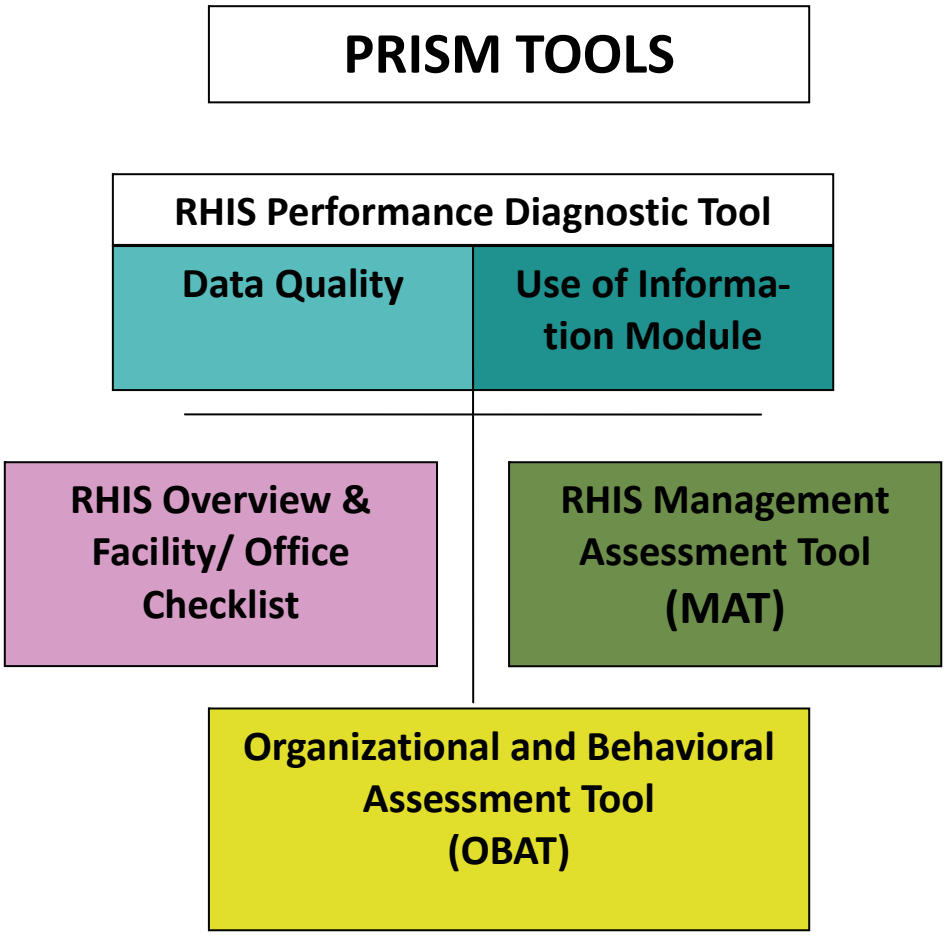
Operationalization of the PRISM framework described above helped define the conceptual boundaries of technical, behavioral, and organizational categories of RHIS performance. The PRISM framework reemphasizes RHIS processes and makes the determinants an essential part of the framework. By specifying the determinants and how they affect each other and overall RHIS performance, it became possible to test various hypotheses implicit within the PRISM framework and to test the reliability and validity of the PRISM framework itself. The framework also helped in the development of the tools for measuring RHIS performance, RHIS processes, and the organizational, behavioral and technical determinants. The PRISM tools help identify the strengths and weaknesses in RHIS performance and processes, and help determine various technical, behavioral, and organizational factors influencing RHIS processes and performance. Finally, the analyses help provide direction related to which gaps to fill, at what level, and when in order to improve the system and its performance, leading to better health system performance.

The PRISM framework information is captured through different tools. The diagnostic tool (sky blue color, **Figure 1**) assesses RHIS performance, RHIS processes, supervision and technical factors. The office/facility checklist (pink color, **Figure 1**) estimates the level of available resources such as forms, registers, staff, etc. The management assessment tool (green color, **Figure 1**) measures the effectiveness of management functions. Lastly, the OBAT (yellow color, **Figure 1**) assesses the promotion of a culture of information and key behavioral factors that influence RHIS process and performance.

Chapter II:
PRISM Tools Package

Chapter 2: PRISM Tools Package

The PRISM Tools Package is a set of RHIS performance assessment tools that are developed from the PRISM conceptual framework. When used as a whole, the package will provide a comprehensive picture of RHIS performance and its contributing factors in the technical, organizational, and behavioral areas. Results will allow users to develop multidimensional interventions to improve RHIS performance.



Chapter III:

RHIS Performance Diagnostic Tool

Chapter III: RHIS Performance Diagnostic Tool

Uses

The RHIS Performance Diagnostic Tool is used at the facility and higher levels to:

1. Assess the level of data quality in relation to completeness, timeliness, and accuracy at the district or higher levels and accuracy of data at the facility level;
2. Assess the level of information use in relation to discussion, decision-making, monitoring, and promotion of information use;
3. Assess the existence of RHIS processes such as data collection, completeness, vertical and horizontal data transmission, accuracy checking, data processing, analysis, and feedback
4. Assess the level of technical determinants related to procedures manuals and forms, software, and design; and
5. Compare RHIS performance with RHIS processes and determinants affecting performance.

Description

The diagnostic tool measures strengths and weaknesses in different dimensions of data quality, information use, and RHIS processes. The tool provides information about technical determinants such as perceived user-friendliness of forms, software, and RHIS design, and quality of supervisory visits.

The diagnostic tool consists of four forms on data quality and information use: two for the district level or higher and two for the facility level. These forms differ by level because some determinants such as timeliness and completeness could not be measured at the facility level. Similarly, the questions related to RHIS design and information technology are more relevant for the district or higher level. However, the information use section is almost similar for both levels, except for the addition of a section on the quality of supervision at the facility level.

The data for this tool is analyzed using a data entry and analysis tool (DEAT). The tool outputs are presented under the section on DEAT.

Strengths

The data quality and information use results are described in quantitative terms rather than qualitative, which helps set control limits and targets. If these tools are used on a regular basis, trends in data quality and information use can be monitored over time. This will allow health system managers to know the level of data quality that can be used for making corrections for estimates. Managers can also monitor those determinants that hamper use of information collected to make decisions for improving health system performance or advocating for status change.

Limitations

The data quality and information use indicators are not all inclusive. The diagnostic tool should be adapted to meet the needs of the RHIS in a given country to reflect their particular objectives and data processes. Before implementing the adapted questionnaires, pre-test them and make final adjustments.

Instructions for Filling the Diagnostic Tool: Data Quality at District Level

Section: Identification

All questionnaires have identification questions related to district name, interviewee's name and title, assessor's name, and date of assessment.

Ask:

> **RHIS PERFORMANCE DIAGNOSTIC TOOL**
>
> **Quality of Data Assessment: District Office Form**
>
> Name of the District: **Anacostia**
> Date of Assessment: **Sept 30, 2009**
> Name of the Assessor: **John Snow**
> Name and Title of Person Interviewed: **Jane Doe, HMIS Office**

Section: Data Completeness and Transmission

The following nine questions are related to data completeness and transmission.

DQ1 Ask:
Does the district office keep copies of RHIS monthly reports sent by health facilities?

This question asks about record keeping of the monthly report at the district level. Please note that if the system does not require a monthly report, it could be replaced by any routine report that is required, such as quarterly, six-month, or any other routine report whose accuracy should be checked.

DQ2 Ask:
What is the number of facilities in the district that are supposed to be reporting to (enrolled in) RHIS?

This question inquires about the number of health facilities that are supposed to be enrolled or registered for reporting through RHIS. This is important because it will be the denominator for calculating the completeness of reporting.

DQ3 Ask:
What is the number of facilities in the district that are actually reporting to (enrolled in) RHIS?

This question looks for the number of health facilities actually reporting through RHIS. The rationale

for this question is to understand the gap between the number of facilities that are supposed to be enrolled or registered for reporting through RHIS and those that are actually reporting.

DQ4
Count the number of monthly reports submitted by the facilities for any two months (of the surveryor's choosing).

This question first confirms the availability of monthly reports (from the selected two months) at each facility. The question assesses the completeness of data from all facilities in a given district. The rationale for having the data for two months, with at least a gap of three months duration, is to determine a positive difference over time. However, if it comparison over time to observe change is not needed or time is limited, only one month's data on available reports is enough to provide information on completeness.

The surveyors should collect all monthly reports submitted by the facilities at the district levels for selected months a and b. They count the monthly reports for month a and put the total under the cell of DQ4a and repeat the process for month b.

DQ5 Ask:
What is the deadline for the submission of the RHIS monthly report by facility?

This question indirectly deals with timeliness of data. It acts as a dividing line between those facilities submitting monthly reports and those facilities not meeting the deadline.

DQ6 Ask:
Does the district office record receipt dates of the RHIS monthly report?

This question informs about whether the district office records the date it receives the monthly report from facilities. Without recording the date of submission, it would be impossible to note which facilities met the deadline and which did not. In the absence of this data, it would not be possible to calculate timeliness.

DQ7
If DQ6 yes, check the date of receipt for the last two months to answer DQ7 (the total number of reports received before and after the deadline should be the same as in DQ4).

This question requires the surveyor to observe the monthly report's submission date for a selected month (the same month selected in DQ4) and compare it with the answer to DQ5. If the submission date is the same, or before the submission date then note it down on a piece of paper to facilitate counting. Repeat the process for all submitted monthly reports for that month.

After counting all the reports submitted on time, record that number in cell DQ7a1. Now subtract that number from DQ4a and write the number in DQ7a2. The two numbers in DQ7a1 and DQ7a2 should

be equal to DQ4a. Repeat the procedure for the second month and put the number in DQ7b3 and DQ7b4, which should be equal to DQ4b. Note that *DQ4a and DQ4b are denominators, while DQ7a1 and DQ7b3 are numerators for calculating timeliness*.

DQ8 Observe:
Does the district have a record of people who receive monthly report data by a certain deadline after receiving monthly reports from the facilities?

This question tries to determine whether a district has a deadline by which to distribute monthly data to various people (i.e. program managers). This also informs whether data is confined to RHIS staff or if it is distributed more widely for making decisions within the health care system.

DQ9 Observe:
Does the district have a record of submitting data on time to regional and/or national levels?

This question tries to assess whether districts keep a record of submitting data on time to higher levels. Although this is a "yes or no" question, the rationale is to record the existence of the process, which is better than not having any information at all about the process of disseminating information to higher levels.

Data Transmission						
DQ 1	**Ask:** Does the district office keep copies of RHIS monthly reports sent by health facilities?			1.Yes	0.No	
DQ 2	**Ask:** What is the number of facilities in the district that are supposed to be reporting to (enrolled in) RHIS?			50		
DQ 3	**Ask:** What is the number of facilities in the district that are actually reporting to (enrolled in) RHIS?			50		
DQ 4	**Count** the number of monthly reports submitted by the facilities for any two months (of the surveyor's choosing)			a.month **50**	b.month **45**	**a. Jan '09** **b. July '09**
DQ 5	**Ask:** What is the deadline for the submission of the RHIS monthly report by facility?			**June 15**		If no deadline is set, write no and go to Q8
DQ 6	**Ask:** Does the district office record receipt dates of RHIS monthly reports?			1.Yes	0.No	If receipt dates are not recorded, go to Q8
DQ 7	If DQ6 **yes**, check the date of receipt for the two months to answer DQ7 (the total number of reports received before and after the deadline should be the same as in DQ4).					
		a. Month (specify)		b. Month (specify)		
	Item	1. Before deadline	2. After deadline	3. Before deadline	4. After deadline	**a. Jan '09** **b. July '09**
	Number of facilities	**30**	**20**	**30**	**15**	
DQ 8	**Observe:** Does the district have a record of people who receive monthly report data by a certain deadline after receiving the monthly reports from the facilities?			1.Yes	0.No	
DQ 9	**Observe:** Does the district have a record of submitting data on time to regional and/or national levels?			1.Yes	0.No	

Section: Data Accuracy Check

DQ10

Manually count the number of the following data items from the RHIS monthly reports for the last two months. Compare the figures with the reports from the computer.

This question deals with determining the level of data accuracy. It first requires determining which data points or elements from monthly reports need to be checked. Then, the surveyor records them under the "Item" column and rows "DQ10A, DQ10B, and DQ10C." *This selection should be done before conducting the survey and items should be printed on survey tools.* The *Data Entry and Analysis Tool (DEAT) allows you to modify the data elements in the data entry template.* We have kept space for three data points for one month because of limited time for the survey. However, if two months are considered for assessing change over time, then a total of six data points should be checked, which means doubling the time for checking data point accuracy. We suggest that these data points be selected from different sections of the monthly report (reflecting health or associated support [logistics, finance, etc.] services so that they reflect the performance of multiple health providers or support staff). The selected months should be the same as in DQ4a and DQ4b so that standardized comparisons are possible.

Data Accuracy						
DQ 10	Manually count the number of the following data items from the RHIS monthly reports for the last two months. Compare the figures with the reports from the computer.					
	Item	a. Month (specify)		b. Month (specify)		
		Manual count	Computer or paper database	Manual count	Computer or paper database	
DQ A	ANC3 Visit	78	79	80	60	
DQ B	DPT3 Visit	76	73	82	80	
DQ C	HIV+ Preg	18	18	22	23	

The surveyors collect all monthly reports at the district levels for selected months and put them in two piles of month a and month b. Since the number of facilities might be large in a given district, and could lead to inaccuracies in calculation, we propose using the tally sheet A (see below) to add data points from all facility monthly reports, for months a and b respectively.

Tally Sheet A		
a. Month A:___January 2009_____		
DQ10A	ANC3 Visit	25 + 21 + 13 + 19 = 78
DQ10B	DPT3 Visit	19 + 16 + 21 + 20 = 76
DQ10C	HIV+ Preg	5+ 3 + 3 + 7 = 18
a. Month B:__July 2009_____		
DQ10A	ANC3 Visit	27 + 23 + 19 + 11 = 80
DQ10B	DPT3 Visit	15 + 19 + 23 + 25 = 82
DQ10C	HIV+ Preg	2+ 7 + 5 + 8 = 22

1. Start with the pile of month a facility monthly reports.
2. Take the first facility report and go to the selected data point A. Take the entered number from the monthly report and transfer it to the tally sheet row DQ10A and add a plus sign to show that it will be added later with the other number.
3. After that, check the second data point B and put it under DQ10B row, do the same for the third data point and put it under row DQ10C.
4. Now, take the second facility monthly report and continue repeating the process until all data points (DQ10A, DQ10B, and DQ10C) from all monthly reports are entered in the tally sheet.
5. After completing the process of putting all three data points from all facility reports in their respective rows, add the numbers to get a grand total number for each data point separately.
6. Transfer the total of DQ10A, DQ10B, and DQ10C in the tally sheet to column "manual count" appropriate cells of DQ10A, DQ10B and DQ10C.
7. To fill DQ10A, DQ10B, DQ10C in "computer" column, ask for the paper or computer database where data is entered and kept at the district level. Check the number of selected data points A, B, and C of month a in the database and put the same numbers in the DQ10 column "computer/ paper" in rows A, B and C.
8. Now repeat the process for month b.

Note that we use the manual count as the denominator for data points A, B, and C and the computer or paper database count as the numerator for data points A, B, and C in order to calculate the level of data accuracy for data points A, B, and C respectively.

Section: Data Processing and Analysis

DQ11.
Does a database exist to enter and process data?

This question asks whether a database exists to enter data from the monthly reports. It could be in the form of a notebook where each facility's data is entered, or it could take the form of computer software. Observe and circle "yes or no," whichever is appropriate.

DQ12.
Does the database produce the following?

This question examines what kind of data processing or analyses are possible. Some specific types of processing or analysis are captured under the sub-questions. Observe and circle "yes or no," whichever is appropriate.

DQ12A

Calculate indicators for each facility catchment area.

This question specifies whether the database can calculate indicators using numerators and denominators for each facility's catchment population, demonstrating the level of that indicator for a particular facility. Observe and circle "yes or no," whichever is appropriate.

DQ12B

Data summary report for the district.

Observe that the database processes data in such a way that the district summary report is prepared based on various indicators. Circle "yes or no," whichever is appropriate.

DQ12C

Comparisons among facilities.

Observe that the database conducts analysis in such a way that comparison among facilities in a district by various indicators is possible. Circle "yes or no," whichever is appropriate.

DQ12D

Comparisons with district/national targets.

Observe that the database conducts a comparative analysis to show that the facilities are meeting district or national targets. Circle "yes or no," whichever is appropriate.

DQ12E

Comparisons among types of services coverage.

Observe that analysis can be done to compare which services are better performed than others. For example, is immunization better performed than antenatal care or is antenatal care better performed than postnatal care, etc.? Circle "yes or no," whichever is appropriate.

DQ12F

Comparisons of data over time (monitoring over time).

Observe that analysis is possible to see whether a certain service is improving, static, or declining over time. Circle "yes or no," whichever is appropriate.

	Data Processing/Analysis				
DQ 11	Does a database exist to enter and process data?	0. No	1. Yes, by manual	2. Yes, by computer	
DQ 12	Does the database produce the following?				
DQ 12A	Calculate indicators for each facility catchment area		1.Yes	0.No	
DQ 12B	Data summary report for the district		1.Yes	0.No	
DQ 12C	Comparisons among facilities		1.Yes	0.No	
DQ 12D	Comparisons with district/national targets		1.Yes	0.No	
DQ 12E	Comparisons among types of services coverage		1.Yes	0.No	
DQ 12F	Comparisons of data over time (monitoring over time)		1.Yes	0.No	

Section: RHIS Registers, Data Collection Forms, Information Technology

The following questions assess the respondent's perceptions about the use of data collection forms, registers, and information technology.

DQ13

Do you think that the RHIS procedure manual is user-friendly?

This question explores whether the respondent feels that the procedure manual is easy to use.

DQ14

Do you think that the monthly report form is complex and difficult to follow?

This question explores whether the respondent perceives the monthly report form as having too much information or instructions that are not clear and therefore difficult to understand and fill in.

DQ15

Do you find the data software user-friendly?

This question inquires whether the respondent feels that the data software is easy to use.

DQ16

Do you find that information technology is easy to manage?

This question explores whether the respondent realizes that all concerned can easily manage the existing information technology. The staff is available to handle any problem when it arises.

DQ17

Do you think that the information system design provides a comprehensive picture of health system performance?

This question inquires whether the respondent senses that the existing information system captures enough aspects of the health system to provide a big picture of overall health system performance (i.e. all types of services, logistics, finances, etc.)

DQ18

Do you think existing RHIS gather information that is also included in other information systems?

The intent of this question is to get the respondent's perception of whether the routine information system is collecting information that is also collected by other vertical information systems or service specific information systems (i.e. immunization, malaria, HIV and AIDS, TB, etc.)

DQ19

Does a software or data warehouse exist that integrates data from different information systems?

This question inquires whether a RHIS software or data warehouse exists to combine data from other vertical programs. The purpose is to understand how many respondents know that software can integrate data from different vertical programs.

DQ20 Does the information technology (Land Area Network [LAN] or wireless network) exist to provide access to information for all district managers and senior management ?

The intent of this question is to assess whether a district or higher level information system manager could distribute or provide access to information to various program managers sitting in various offices throughout the LAN.

DQ13	Do you think that the RHIS procedure manual is user-friendly?	1.Yes	0.No	
DQ 14	Do you think that the monthly report form is complex and difficult to follow?	0.yes	1.no	
DQ 15	Do you find the data software user-friendly?	1.Yes	0.No	
DQ 16	Do you find that information technology is easy to manage?	1.Yes	0.No	
DQ 17	Do you think that the information system design provides a comprehensive picture of health system performance?	1.Yes	0.No	
DQ 18	Do you think existing RHIS gathers information that is also included in other information systems?	1.Yes	0.No	
DQ 19	Does a software or data warehouse exist that integrates data from different information systems?	1.Yes	0.No	
DQ 20	Does the information technology (Land Area Network [LAN] or wireless network) exist to provide access to information for all district managers and senior management?	1.Yes Partially	2.Yes Completely	0.No

DQ21, DQ22, DQ23, DQ24, and DQ25 questions are left blank.

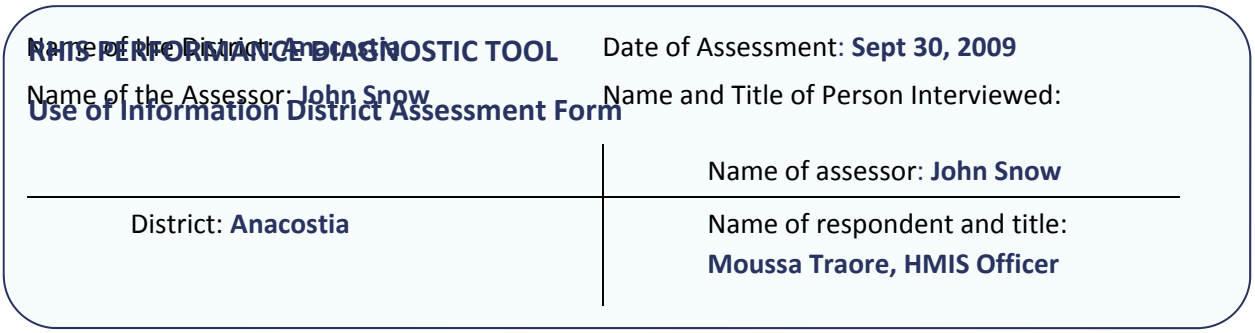
These blank spaces can be used to add questions that gather additional information as needed, which might be unique to a county and not captured by PRISM tools.

DQ 21				
DQ 22				
DQ 23				
DQ 24				
DQ 25				

Instructions for Filling in the Diagnostic Tool: Use of Information at District Level

Section: Identification

All questionnaires have identification questions related to district name, interviewer's name and title, assessor's name, and date of assessment.


RHIS PERFORMANCE DIAGNOSTIC TOOL
Use of Information District Assessment Form

Name of the District: Anacostia
Date of Assessment: Sept 30, 2009
Name of the Assessor: John Snow
Name and Title of Person Interviewed:

	Name of assessor: John Snow
District: Anacostia	Name of respondent and title: Moussa Traore, HMIS Officer

Section: RHIS Report Production

DU1

Does this district office compile RHIS data submitted by facilities?

This question confirms whether the district office brings together data submitted by facilities into a report.

DU2

Does the district issue any reports containing RHIS information?

This question assesses whether the district office distributes a report about the collected RHIS data. It is important to know this, because it shows whether data remains confined at the district or higher level or whether it is distributed for action.

If the answer is no, then there is no need to ask questions DU3 and DU4, because they become redundant if no report is produced.

	RHIS report production			
DU1	Does this district office compile RHIS data submitted by facilities?	1.Yes	0.No	
DU2	Does the district issue any reports containing RHIS information?	1.Yes	0.No	If no, go to DU4

Section: Types of RHIS Reports Produced and their Frequency

DU3a-e1:
Title of the report

Our suggestion is that this part should not be left open-ended, as it creates a problem in analyzing data. All RHIS require district or higher levels to produce reports monthly, quarterly, half-yearly, and/ or annually, or immediate epidemic reports. Thus, it is better to identify reports that district or higher levels are required to produce. We recommend using the titles of the reports that are produced at regular intervals. *This selection should be done before the survey and RHIS reports should be printed on the survey tools to keep the collection of data standardized. The Data Entry and Analysis Tool (DEAT) allows you to modify report names in the data entry template.*

DU3a-e2:
Number of times this report is supposed to be issued per year

Once a report is identified, then it is determined how many times the report is produced in a year. This frequency acts as a denominator to calculate the actual production level of reports (versus how many are *supposed* to be produced).

DU3a-e3:
Number of times that reports actually have been issued over the last 12 months

This frequency acts as a numerator to calculate the actual production level of reports (versus how many are *supposed* to be produced).

DU4 :
Did the district office send a feedback report (using RHIS information) to facilities during the last three months?

This question determines whether the district or higher level actually sent a feedback report in the last three months.

DU3	If yes, please list reports that contain data/information generated through RHIS. Please indicate frequency of reports and the number of times the report was actually issued for the last 12 months. Please confirm the issuance of the report by counting them.				
	1. Title of the report	2.No. of times this report is supposed to be issued per year	3. No. of times that reports are actually issued for the last 12 months		
DU3a	**Monthly**	**12**	**12**		
DU3b	**Quarterly**	**4**	**4**		
DU3c	**Annual**	**1**	**1**		
DU3d					
DU3e					
DU4	Did the district office send a feedback report (using RHIS information) to facilities during the last three months?		1.Yes	0.No (circled)	

Section: Display of Information at District or Higher Level

Questions DU5, 6, and 7 are about display of information at the district office or higher level.

DU5- 1
Indicator

We have selected mother and child health, facility use, and disease surveillance for checking display of data because these are common services covered under RHIS (these correspond with DU5a – DU5d). However, the surveyor should feel free to use any other services which they think reflect the RHIS information display in a given country. If the office does not display data from the selected indicators, go to DU6.

DU5-2:
Type of display (Please check)

The display of data could take the form of a table, graph/chart, or maps. Thus, the appropriate box corresponding to the form that the data is displayed in should be checked. There can be more than one response.

DU5-3:
Updated

Here the intent is to know whether the display of information is current and up to date by the previous month or quarter. Circle the appropriate answer.

DU6:
Does the office have a map of the catchment area?

Observe that a map of the catchment area is available. Catchment population is essential for calculating service indicators for the target population. Thus, having a map can provide evidence that the district is paying attention to the catchment population concept.

DU7:
Does the office display a summary of demographic information, such as population by target group?

Observe that the office displays a breakdown of the population target group. Perhaps the availability of this information is more important than a map of the catchment area, because it is crucial for calculating targets and indicators.

Display of information						
DU5	Does the district office display the following data? Please indicate the types of data displayed and whether the data are updated for the last reporting period.					If no, go to U6
	1. Indicator	2.Type of display (Please tick)		3. Updated		
DU5a	Related to mother health	Table	√	1.Yes	0.No	
		Graph/Chart				
		Map				
DU5b	Related to child health	Table		1.Yes	0.No	
		Graph/Chart	√			
		Map				
DU5c	Facility Use	Table	√	1.Yes	0.No	
		Graph/Chart				
		Map	√			
DU5d	Disease surveillance	Table		1.Yes	0.No	
		Graph/Chart	√			
		Map	√			
DU6	Does the office have a map of the catchment area?			1.Yes	0.No	
DU7	Does the office display a summary of demographic information, such as population by target group?			1.Yes	0.No	

Section: Use of Information in Available Reports at District or Higher Level

DU8
Is feedback, quarterly, yearly or any other report on RHIS data available, which provides guidelines/ recommendations for actions?

The purpose of this question is to determine if various reports are available (at the district or higher level) that provide evidence of information use. If no report exists, or if there is no evidence that information was used in an existing report, go to DU10.

DU9 If yes to DU8, what kinds of decisions are made in reports of RHIS data/information for actions? Please check the type of decision based on the kind of analysis present in the reports.

Once you have found a report describing decisions, we would like to assess what specific decisions were made. This question has two parts. One part is about the kind of analysis and the second part is about the types of decisions made based on those analyses.

An example could be a simple frequency table showing the level of service coverage and a decision made to improve or maintain that service coverage. Another example is a comparison table of the immunization rate and antenatal care and postnatal care coverage and making a decision about which service needs to be improved more than others.

Many times, analysis and decision-making do not go hand-in-hand, as they should in ideal report writing. Thus, there is flexibility to give a "yes" answer, if a decision described in the report was made without describing the analysis that led to the decision. However, in assessing an advanced and sophisticated information system, one can apply the two criteria more strictly.

DU9a-d-

These questions assess the level of information use described in available reports.

Although we have limited this question to four types of decisions (appreciation, mobilization of resources, advocacy, and policy) we encourage adaptation of these decisions according to local conditions, while keeping the broad categories of decisions in place.

DU9a

Appreciation and acknowledgement based on number/percentage of facilities showing improved or consistently good performance within control limits over time (month to month comparisons).

Observe that the report(s) provides appreciation for those facilities that are performing well. An example is a report that recognizes those facilities which are performing within the recommended boundaries of performance or those that consistently surpass the upper limit of performance.

DU9b

Mobilization/shifting of resources based on comparison by facilities.

Observe that the report(s) contains analysis that compares the performance of facilities over time. If some facilities are consistently performing well then it is possible to shift some resources from higher performing facilities to lower performing facilities. Thus, decisions could be made to shift or mobilize more resources based on this information.

DU9c

Advocacy for more resources by comparing performance by areas (sub-districts, cities, villages), human resources, and logistics

Sometimes it is not possible to mobilize or shift resources internally and help is needed from external sources. In other words, it is necessary to advocate for additional resources, which in itself is also a form of decision-making – the decision to ask for help from others or higher levels. Thus, *observe whether the report shows some kind of advocacy to ask for more resources from higher levels, the community, or other external sources.*

DU9d

Development of policies by comparing types of services.

When data show that certain services are doing fine but others need more attention, this might call for a change in existing policy or development of a new policy to address an emerging health problem. *Thus, observe whether the report shows that a decision was made to revise a policy or to develop a new policy.*

DU8	Is feedback, quarterly, yearly or any other report on RHIS data available, which provides guidelines/ recommendations for actions?	1.Yes	0.No	If no go to U10
DU9	If yes to DU8, what kinds of decisions are made in reports of RHIS data/ information for actions? Please check types of decision based on types of analysis present in reports.			
	Types of decisions based on types of analysis			
DU9a	Appreciation and acknowledgement based on Number/percentage of facilities showing performance within control limits over time (month to month comparisons)	1.Yes	0.No	
DU9b	Mobilization/shifting of resources based on comparison by facilities	1.Yes	0.No	
DU9c	Advocacy for more resources by comparing performance by areas (sub-districts, cities, villages), human resources and logistics	1.Yes	0.No	
DU9d	Development or revision of policies by comparing types of services	1.Yes	0.No	

Section: Discussion and Decisions about Use of Information

This section deals with use of information at the district office or higher level. There is a sequence of events that defines "information use." The managers need to meet, discuss the available information, make a decision based on that information, and follow-up on that decision. This sequence of events is captured as use of information in the following questions:

DU10:
Does the district office have routine meetings for reviewing managerial or administrative matters?

This question determines whether a routine meeting mechanism exists at district or higher level.

DU11:
How frequently is the meeting supposed to take place?

This question is a follow-up of DU10 to determine the interval of these meetings, which indirectly informs about how frequently district officers meet to discuss managerial or administrative matters. Circle the appropriate answer code.

DU12:
How many times did the meeting take place during the last three months? Circle the appropriate answer.

This question is a follow-up to DU11, and assesses the actual number of meetings held during the last three months. It shows whether meetings were held as planned (or less often than planned). Circle the appropriate answer code. The coding is based on DU11 answer codes. If meetings were scheduled weekly for three months, one would expect 12 meetings, thus a coding of 12. However, if the number

of meetings is between 7 and 11, the is code 11. If meetings were scheduled every two weeks for three months, one would expect six meetings, thus a coding of six. However, if the number of meetings is four or five, the is code five. The same logic applies for monthly and quarterly meetings.

DU13:
Is an official record of management meetings maintained?

It is important to keep a record (or minutes) of meetings for both follow-up and for an objective review by outsiders. This record is also an important document to review whether the RHIS information was used. If the answer to this question is "no," go to DU15.

DU14:
If yes, please check the meeting records for the last three months to see if the following topics were discussed:

This question is a follow-up to DU13, because it opens the possibility to review objectively the records for various uses of information. If an official record of the management meetings exist, then the record should be reviewed to answer the following questions:

DU14a:
Management of RHIS, such as data quality, reporting, or timeliness of reporting.

Review the record(s) to determine whether RHIS information is used to manage RHIS, per se, such as availability of RHIS registers and forms, improving or maintaining high data quality, completeness, and timeliness of data, etc.

DU14b:
Discussion about RHIS findings such as patient utilization, disease data, service coverage, or medicine stock out.

Review the record(s) to determine whether discussions took place about RHIS information that reflects facility performance related to health services, logistics, finance, or other information covered under RHIS.

DU14c:
Have they made any decisions based on the above discussions?

Review the record(s) to verify whether discussions about RHIS information led to making any types of decisions about RHIS management or health system management.

DU14d:
Has any follow-up action taken place on the decisions made during the previous meetings?

Review the record(s) to ascertain whether decisions were followed up on or acted on, and whether the consequences of the actions were reviewed.

DU14e:

Are there any RHIS related issues/problems referred to regional/national level for action?

Review the record to determine whether decisions based on RHIS information were referred to a higher level for action, because the district was unable to take action.

	Discussion and decisions about use of information			
DU10	Does the district office have routine meetings for reviewing managerial or administrative matters?	1.Yes	0.No	
DU11	How frequently is the meeting supposed to take place? Circle the appropriate answer. 4. weekly 3. every two weeks 2. monthly 1. quarterly 0. no schedule			
DU12	How many times did the meeting take place during the last three months? Circle the appropriate answer. 12. 12 times 11. between 7 and 11 6. 6 times 5. either 4 or 5 3. 3 times 2. 2 times 1. 1 time 0. none			
DU13	Is an official record of management meetings maintained?	1.Yes	0.No	If no, go to U15
DU14	If yes, please check the meeting records for the last three months to see if the following topics were discussed:			
DU14a	Management of RHIS, such as data quality, reporting, or timeliness of reporting	1.Yes, observed	0. No	
DU14b	Discussion about RHIS findings such as patient utilization, disease data, service coverage, or medicine stock out	1.Yes, observed	0. No	
DU14c	Have they made any decisions based on the above discussions?	1.Yes, observed	0. No	
DU14d	Has any follow-up action taken place on the decisions made during the previous meetings?	1.Yes, observed	0. No	
DU14e	Are there any RHIS related issues/problems referred to regional/national level for action?	1.Yes, observed	0. No	

Section: Promotion of Use of RHIS Information at District/Higher Level

This section deals with the promotion of information use at the district office or higher level. To promote the use of information, districts or higher levels must show staff that they value the use of information and they will create mechanisms and processes to do that.

The following questions were developed to show whether districts or higher levels promote the use of information. For example, can the district office (or higher level) show that they have used the information? Do mechanisms and/or processes exist, such as the presence of directives, to remind staff that information must be used? Have they used, various means of communication showing success stories of use of information ? Does advocacy documentation exist based on that evidence or information? Is there evidence available at the district level (or higher) that shows involvement in discussions about how to use information by people from lower levels? Answers to these questions are aggregated to get an index score of the degree to which information use is promoted by the RHIS.

DU15:
Did the district annual action plan show that decisions were made based on HIS information?

First ask for the district annual plan and then verify that RHIS information is used during annual planning. If the district plan is not available, then we assume that RHIS information is not used for developing the district annual plan. In such a case, the answer "no" should be circled.

DU16:
Did district office records from the previous three months show that districts/senior management issued directives based on the use of information?

Ask to see the district's documentation to verify that directives are issued about promoting the use of RHIS information. If documentation is not available, then we assume that such directives were not issued. In such a case, the answer "no" should be circled.

DU17 Did the district or national RHIS office publish a newsletter or report in the last three months that include use of information success stories?

First, ask if the district level (or higher) offices have a newsletter or report and then validate that use of RHIS information success stories were published. If there was no newsletter or report available at all, then the answer "no" should be circled.

DU18:
Does the office have documentation showing that RHIS information is used for advocacy?

First ask for the documentation and then confirm that advocacy was conducted for specific issues. If the documentation is not available, then we assume that RHIS information is not used for advocacy. In such a case, the answer "no" should be circled.

DU19: Do district staff meeting records show that people in charge of facilities attended meetings that focus on RHIS performance at their facilities?

First, ask for the district's records of the meetings. Review the participant list to check whether facility in-charge names are listed. This shows whether district officials involve staff from lower levels in meetings to discuss and plan based on RHIS information. If no records are available then, we assume that staff from lower levels are not involved in these kinds of meetings. In such a case,, the answer "no" should be circled.

DU20 Please give examples of how the district office uses RHIS information for health system management. 0. No examples 1. Yes (details follow)

The respondent could describe a story about the use of information that may be related to managing resources, planning for future activities, advocacy, policy change, or anything else that has led to a change or maintaining high performance. If these criteria are not met, circle "no." If these criteria are met, ask for evidence of information use and circle "yes."

	Promotion and Use of RHIS information at district/higher level			
DU15	Did district annual action plan show decisions were made based on HIS information?	1.Yes	0.No	
DU16	Did district office records from previous three months show that districts/ senior management directives were based on use of information	1.Yes	0.No	
DU17	Did district/national RHIS office publish a newsletter or report in last three months that included use of information success stories?	1.Yes	0.No	
DU18	Does the office have documentation showing that RHIS information is used for advocacy?	1.Yes	0.No	
DU19	Do district staff meeting records show that people in charge of facilities attended meetings that focus on RHIS performance at their facilities?	1.Yes	0.No	
DU20: Please give examples of how the district office uses RHIS information for health system management 0. No examples 1. Yes (details follows) There is evidence that resources for VCT were increased due to an increase in the number of HIV-positive test results at primary care facilities.				

DU21, DU22,DU23,DU24, DU25 questions are left blank. These blank spaces could be used to add questions to gather information that is unique to a county and not captured by the PRISM tools.

DU21		
DU22		
DU23		
DU24		
DU25		

Instructions for Filling out the Diagnostic Tool: Data Quality at the Facility Level

Section: Identification

All the questionnaires have identification questions related to the district name, the interviewer's name and title, the assessor's name, and the date of assessment (all similar to the district form).

Because the data is being collected at the facility level, the name of the facility and the type of facility should also be noted. For example, is the facility a primary care facility, an MNCH center or a hospital? If specific categories of health facilities are designated in a given country, those categories should be used. Please use the "type" box to note the category of the health facility because it will help with data entry and analysis.

Ask:

RHIS PERFORMANCE DIAGNOSTIC TOOL

Quality of Data Assessment: Health Facility Form

Date of Assessment: **October 16, 2009**	Name of assessor: **Anwer Aqil**	Name & Title of Person Interviewed: **John Snow, Director**
District: **Anacostia**	Facility: **Anacostia Primary Health Care Center**	Type: **PHC**

Section: Data Recording

The following three questions are related to data recording:

FQ1:
Does this facility keep copies of the RHIS monthly reports, which are sent to the district office?

This question asks about how well the facility keeps records of its monthly report.. Although it is stated that if the answer to FQ1 is "no," then go to FQ5, in practice, it is very unlikely that the facility will not have copies of the RHIS monthly reports. Before the start of the survey, this question needs to be adapted to reflect what kinds of reports are kept at the district and facility levels to check their data accuracy.

Please note that if the system does not require a monthly report then it could be replaced by any other regular report, such as a quarterly, six-month, or annual report.

FQ2:
Count the number of RHIS monthly reports that have been kept at the facility for the last twelve months.

This question serves two purposes. First, it determines the number of reports available at the facility and second, it indirectly determines the quality of record keeping.

FQ3:

Does this facility keep an outpatient register?

In most countries, much of the information for checking the accuracy of the monthly report's data comes from the outpatient department (OPD) register. However, sometimes this information is spread throughout multiple registers such as immunization, MNCH, or others. However, this question is unnecessary if we check data accuracy by selecting multiple data elements from a variety of registers.

Data Recording				
FQ 1	Does this facility keep copies of the RHIS monthly reports, which are sent to the district office?	1. Yes	0. No	If no, go to FQ3
FQ 2	Count the number of RHIS monthly reports that have been kept at the facility for the last twelve months.	12		
FQ 3	Does this facility keep an outpatient register?	1. Yes	0. No	If no, go to FQ5

Section: Data Accuracy Check

FQ4:

Using the outpatient register, fill in the following information for any two months (month A and month B). If the facility does not keep copies of the monthly report, obtain copies at the district office. Compare the figures with the computer-generated reports.

This question determines how accurate the data is at particular facility. First, you must determine which data points or elements from the monthly reports need to be checked. Enter these data points in the "item" column. There are only four data points per month because the survey does not allow time for more.

We suggest that the data points should be chosen from different sections of the monthly report, in order to reflect on the performance of different health services and their associated support mechanisms (logistics, finance, etc.). The data points should be selected before the survey and printed on the survey tools. Please note that the data entry template allows you to write in the names of the selected data points. The selected months should be the same as in DQ4a and DQ4b so that standardized comparisons are possible.

Since the number of selected data points might include large numbers, be spread over several pages of the monthly register, and lead to inaccuracies in calculation, we propose using tally sheet A (see below). This allows you to add up the data points from all pages of monthly register for months A and B, respectively.

Tally Sheet A		
a. Month A:___January 2009_____		
FQ4A	DPT3	20 + 19 + 14 + 15 = 68
FQ4B	3rd ANC visit	15 + 14 + 22 + 17 = 68
FQ4C	HIV+ Preg	5+ 3 + 3 + 6 = 17
FQ4D		
a. Month B:__July 2009_____		
FQ4A	DPT3	27 + 20 + 19 + 12 = 78
FQ4B	3rd ANC visit	13 + 17 + 23 + 26 = 79
FQ4C	HIV+ Preg	2+ 8 + 5 + 9 = 24
FQ4D		

1. Start with the first day of month A on page one of the selected register.
2. Count all the selected data points for FQ4A and transfer them to the tally sheet (in row FQ4A). Add a plus sign to show that the numbers will be summed later.
3. Now count all selected data points for FQ4A from the second page of the register and transfer them to the tally sheet (in row FQ4A) and add a plus sign to show that the numbers will be summed later.
4. Repeat the process until all pages ending on the last day of the month are counted.
5. Repeat the process for all data points for FQ4B, FQ4C, and FQ4D.
6. Now add the numbers in each row to get the totals for each data point separately.
7. Transfer the totals for FQ4A, FQ4B, FQ4C, and FQ4D to the "data accuracy check" tally sheet. Enter the numbers for FQ4A, FQ4B, FQ4C, and FQ4D in the "# from register" column.
8. Use the monthly report data to fill in the "#from report" column.
9. Repeat the process for month B.

To calculate the level of data accuracy, we use the manual count as the denominator, and we use the monthly report count as the numerator. This also allows us to check for under- and over-reporting.

Data Accuracy Check						
FQ 4	Find the following information in the outpatient register for the selected two months. If the facility does not keep copies of the monthly report, obtain copies at the district office and complete the					
	Item	a. Month (specify)		b. Month (specify)		
		# from register	# from report	# from register	# from report	
FQ 4A	**DPT3**	**68**	**78**	**78**	**80**	
FQ 4B	**3rd ANC visit**	**68**	**76**	**79**	**82**	
FQ 4C	**HIV+ Preg**	**17**	**18**	**24**	**22**	
FQ 4D						

Section: RHIS Processes

RHIS can not be effective without processes or mechanisms in place that encourage organizational members to perform RHIS-related tasks, such as checking data accuracy, preparing monthly/quarterly reports, and submitting reports on time. Even when processes or mechanisms are in place, if there is no encouragement to implement them, it could result in a lack of motivation to perform the RHIS-related tasks. Thus, we added questions to assess whether there are consequences if such processes are not followed. Combining the responses to the following two questions helps us determine how effective the RHIS processes are.

It is very likely that process implementation and warning of consequences are in the same directive so it is easier to check both simultaneously. Thus we encourage that FQ5 (availability of directive) and FQ6 (consequences if a process is not implemented) be checked together and noted accordingly.

FQ5:
Did you receive a directive in the last three months from the senior management in the district office to:

Please note that this question requires you to specify a defined time period, such as during the past three or six months. The rationale for choosing a recent time period is to make sure that the directive is not so old that people have forgotten about it. In addition, directive repetition at close intervals stresses that senior management values the smooth function of RHIS processes. Lastly, it is easier to find and review records that are not too old.

FQ5a:
Check the accuracy of data at least once in the last three months?

Observe that there is an official correspondence or record stating that the facility is supposed to check data quality at least once during a three month period. This directive emphasizes how much senior management values data quality.

FQ5b:

Fill out the monthly report form completely

Observe that there is an official correspondence or record stating that the facility is supposed to fill in the monthly report completely. This directive shows how much senior management values reports that have been filled in completely.

FQ5c:

Submit the report by a declared deadline?

Observe that there is an official correspondence or record stating that the facility is supposed to submit reports by a specified time. This directive highlights how much senior management values timely reporting.

FQ6:

During the last three months, did you receive notification from the senior management in the district office that there will be consequences for not adhering to the following directives:

Like FQ5, please note that this question requires you to specify a defined time period, such as during the past three or six months. The rationale for choosing a recent time period is to make sure that the directive is not so old that people have forgotten about it. In addition, directive repetition at close intervals stresses that senior management values the smooth function of RHIS processes. Lastly, it is easier to find and review records that are not too old.

FQ6a:

If you do not check the accuracy of data?

Observe that there is an official correspondence or record stating that if the facility did not check data quality at least once during the last three months, there will be consequences. This directive emphasizes how much senior management values data quality.

FQ6b:

If you do not fill in the monthly reporting form completely?

Observe that there is an official correspondence or record stating that if the facility does not fill in the monthly report completely, there will be consequences. This directive underlines how much senior management appreciates having a complete report.

FQ6c:

If you do not submit the monthly report by the specified deadline?

Observe that there is an official correspondence or record stating that if the facility does not submit a report on time, there will be consequences. This directive highlights how much senior management values timely reporting.

FQ 5	Did you receive a directive from the Senior Management/district office to:				
	5A	Check the data accuracy at least once in three months?	1.Yes,	0. No	
	5B	Fill the monthly report form completely	1.Yes,	0. No	
	5C	Submit report by declared deadline	1.Yes,	0. No	
FQ 6	Did you receive a directive from the Senior Management/district office that there will be consequences:				
	6A	if you do not check the data accuracy	1.Yes,	0. No	
	6B	If you do not fill the monthly reporting form completely	1.Yes,	0. No	
	6C	If you do not submit the monthly report by declared deadline	1.Yes,	0. No	

Section: Data Completeness

FQ7:
How many data items does the facility need to report on in the RHIS monthly report? This number does not include data items for services not provided by this health facility.

We recommend that before starting the survey, the survey organizers should count the total number of data points in the monthly report (or quarterly if that is being used) that the facility is supposed to report on and enter it in this cell before survey. This way, the surveyors do not need to count it themselves every time.

It might be the case that not all data elements need to be filled in by all facilities, such as if a facility provides many different finds of health services. If so, make sure to provide a list of facilities by type and their corresponding number of reported data elements.

For example, Facility Type I provides only immunization and MNCH services, thus, Facility Type I only needs to report on those data elements. Facility Type IV provides all of the services indicated in the monthly report. Thus, Facility Type IV will have to fill in all of the data elements. Such examples show that the total number of data elements to be filled in will be different for each type of facility. Therefore, surveyors should have a list of the types of facilities and their corresponding date elements to facilitate the recording of the appropriate number of data elements specific for each type of facility.

Please note that this section is very important, as it is the denominator for calculating the "completeness of reports" indicator.

FQ8.
Count the number of data items that are supposed to be filled in by this facility but left blank without indicating "0" in the selected month's report.

This question is a follow-up to FQ7. This is an actual sum of the data elements that are left blank in the facility's monthly report. If there is a zero in the data element cell, it is not considered as blank.

Again, please make sure that if you have different types of facilities and their reporting elements differ, make a list (as suggested under FQ7) to count the relevant data elements appropriately.

	Data Completeness	
FQ 7	How many data items does the facility need to report on in the RHIS monthly report? This number does not include data items for services not provided by this health facility.	100
FQ 8	Count the number of data items that are supposed to be filled in by this facility but left blank without indicating "0" in the selected month's report.	7

Section: Data Processing and Analysis

FQ9:
Do data processing procedures or a tally sheet exist?

This question asks whether data processing procedures or a tally sheet exists. The rationale for this question is to assess whether facilities receive guidelines for processing data, such as a tally sheet for the simple addition of numbers, or a method for calculating indicators. Observe and circle "yes" or "no," whichever is appropriate.

FQ10:
Does the facility produce the following:

This question determines what kind of data processing or analyses are conducted at the facility level. Specific types of processing or analyses are captured under the sub-questions. Observe and circle "yes" or "no," whichever is appropriate.

FQ10A:
Calculate indicators for each facility catchment area:

This question specifies whether the facility can calculate indicators for its catchment population, using numerators and denominators that show the level of coverage for a particular service. Observe and circle yes or no, whichever is appropriate.

FQ10B:
Comparisons with district or national targets:

This question measures whether a facility can process data in such a way that the facility summary report compares various indicators against the district or national targets. Observe and circle yes or no, whichever is appropriate.

FQ10C:
Comparisons among types of service coverage:

This question measures whether the facility can analyze data to compare which services are better performed than others. For example, is immunization service better than antenatal service or is ante-natal service better than postnatal service? Observe and circle yes or no, whichever is appropriate.

FQ10D:

Comparisons of data over time (monitoring over time):

Analysis helps us determine whether a certain service is improving, static, or declining over time. Observe and circle yes or no, whichever is appropriate.

Data Transmission /Data Processing/Analysis				
FQ 9	Do data processing procedures or a tally sheet exist?	1. Yes, Observed	0. No	
FQ 10	Does the facility produce the following:			
FQ A	Calculate indicators for each facility catchment area	1. Yes, Observed	0. No	
FQ B	Comparisons with district or national targets	1. Yes, Observed	0. No	
FQ C	Comparisons among types of service coverage	1. Yes, Observed	0. No	
FQ D	Comparisons of data over time (monitoring over time)	1. Yes, Observed	0. No	
FQ 11	Does a procedure manual for data collection (with definitions) exist?	1. Yes, Observed	0. No	

FQ11:

Does a procedure manual for data collection (with definitions) exist?

RHIS usually has a procedure manual that explains how data collection forms are filled out. The manual usually includes definitions of terminology. This question captures whether such a document exists or not. If the document is not available, circle no.

FQ12, FQ13, FQ14, FQ15, and FQ16 questions are left blank. These blank spaces can be used to add questions or to gather additional information unique to a county and not captured by PRISM tools.

FQ 12		
FQ 13		
FQ 14		
FQ 15		
FQ 16		

Instructions for Completing the Diagnostic Tool: Use of Information at Facility or Lower Level

Section: Identification

All questionnaires have identification question related to district name, interviewer's name and title, assessor name and date of assessment similar to the district form. However, because the data is now collected at the facility level, the name of the facility and type of facility should also be collected. The type of facility could be, for example, a primary care facility, an MNCH center, or a hospital. If specific categories of health facilities designated in a given country, those categories should be used. It is better to list the categories under type column, as it helps in data entry and analysis.

Ask:

RHIS PERFORMANCE DIAGNOSTIC TOOL

Use of Information: Facility Assessment Form

Date of Assessment: **October 20, 2009**	Name of assessor: **John Snow**
Facility Name: **Anacostia**	Name of respondent and title: **Aminata Sow**
Facility Type: **Primary Care Center**	District: **Anacostia**

Section: RHIS Report Production

FU1:
Does this facility compile RHIS data?

This question looks at whether the facility collects data submitted by various health providers in order to have a better understanding of it. This data could be aggregated data and not necessarily analyzed; it could take the form of a table or report.

FU2:
Does the facility compile any reports containing RHIS information?

The question assesses whether the facility assembles any reports containing RHIS data. It is important to know this because it indicates whether data remains confined at the district or higher level or whether it is distributed for action.

If the answer is no, then there is no need to ask question FU3 and FU4, because they are redundant if no report is produced.

RHIS report production				
FU1	Does this facility compile RHIS data?	1.Yes	0.No	
FU2	Does the facility compile any reports containing RHIS information?	1.Yes	0.No	If no , go to FU4

Section: Frequency and Type of Produced RHIS Reports

FU3a-d 1:
Title of the report

Our suggestion is that this part should not be left open-ended, because it creates problems during data analysis. All routine health information systems require districts or higher levels to produce reports monthly, quarterly, half-yearly, or annually – or to produce an epidemic report. Thus, it is important to identify these reports that district or higher levels are producing at regular intervals and use them for this survey. The selecting of reports should be done before the survey and the names of the reports should be printed on the survey tools. Please note that the data entry template provides space to enter the name of the selected reports.

FU3a-d 2:
Number of times the report is supposed to be issued per year

Once a report is identified, determine how many times the report is supposed to be produced in a year. This frequency acts as denominator to calculate the production level of the report.

FU3a-d 3:
Number of times the report actually has been issued during the last 12 months

This number acts as the numerator to calculate the production level of the reports.

FU4:
During the last three months, did the district office send a feedback report to the facility using RHIS information?

This question determines whether districts or higher levels actually sent a feedback report during the last three months.

FU3	If yes, please list all reports that contain data/information generated through the RHIS. Please indicate the frequency of these reports and the number of times the reports actually were issued during the last 12 months. Please confirm the issuance of the report by visually observing it.			
	1. Title of the report	2. No. of times this report is supposed to be	3. No. of times this report actually has been issued	
FU3a	Monthly Report	12	10	
FU3b	Quarterly Report	4	4	
FU3c	Annual Report	1	0	
FU3d				
FU4	During the last three months, did the district office send a feedback report to the facility using RHIS information?		1.Yes / 0. No	

Section: Display of Information in the Facility

Question FU5, 6 and 7 are about displaying information at the facility or lower level.

FU5 1:
Indicator

We have selected maternal and child health, facility use, and disease surveillance for checking the display of data because these are common services covered under RHIS. However, the user should feel free to use any other services that they think reflects the RHIS information display in a given country.

FU5-2:
Type of display (please tick)

How data is displayed can take the form of a table, graph or chart, maps, etc. In the row where we have listed the health service and the types of display, please tick the appropriate box indicating what types of data are displayed. You may need to tick more than one box for each health service.

FU5-3:
Updated

Here the intent is to know whether the information displayed is current and up to date as of the previous month or quarter. Circle the appropriate answer.

FU6:
Does the office have a map of the catchment area?

Observe that a map of the catchment area is available. The catchment population is essential for calculating service indicators for the target population. Thus, having a map can provide evidence that the facility is paying attention to the catchment population's needs.

FU7:
Does the office display a summary of demographic information such as population by target group?

Observe whether or not the office displays a breakdown of the population by target group. Because this type of information is crucial for calculating targets and indicators, it is often more important than having a map of the catchment area on display.

Display of information						
FU5	Does the facility display the following data? Please indicate types of data displayed and whether the data have been updated for the last reporting period.					If no go to UI6
	1. Indicator	2. Type of display (Please tick)		3. Updated		
FU5a	Related to maternal health	Table	√	1.Yes	0.No	
		Graph/Chart	√			
		Map/other				
FU5b	Related to child health	Table		1.Yes	0.No	
		Graph/Chart	√			
		Map/other	√			
FU5c	Facility use	Table		1.Yes	0.No	
		Graph/Chart				
		Map/other	√			
FU5d	Disease surveillance	Table		1.Yes	0.No	
		Graph/Chart	√			
		Map/other				
FU6	Does the facility have a map of the catchment area?			1.Yes	0.No	
FU7	Does the office display a summary of demographic information such as population by target group?			1.Yes	0.No	

Section: Use of Information in Available Reports at Facility

FU8:
Is feedback, quarterly, yearly or any other report on RHIS data available, which provides guidelines/ recommendations for actions?

The purpose of this question is to determine if various reports are available at the district or higher level that provide evidence of information use. If no report was available or if available reports did not have evidence that information was used, go to question FU10.

FU9:
If you answered yes to question FU8, what kinds of action-oriented decisions have been made in the reports (based on RHIS data)? Please check the boxes accordingly.

Once you have found a report describing action-oriented decisions, we need to know what specific decisions were made. This question has two parts: The first part looks at the types of analysis and the second part looks at the kinds of decisions that were made *based on* those analyses.

For example, an analysis could consist of a frequency table showing the level of service coverage. Subsequently, a decision could have been made to improve or maintain that service coverage. Another example is a comparison table of immunization rates and antenatal and postnatal care coverage, follwed by a decision about which services need to be prioritized for improvement.

Often, analysis and decision-making do not go hand-in-hand, as they should in ideal report writing. Thus, it is okay to answer yes if a decision is described in the report without describing the analysis that led to the decision. However, when assessing a more advanced and sophisticated information

system, one can apply the two criteria more strictly.

FU9a-d:
These questions assess the level of information use as described in available reports.

Although we have limited this question to four types of decisions – appreciation, mobilization of resources, advocacy, and policy – we encourage you to adapt these decisions according to local conditions. However, please make sure to keep the broad categories of decisions in place.

FU9a:
Review the service strategy (e.g. immunization) by examining that service's performance targets with the actual performance from month to month.

Observe that the report(s) provides information that the strategy for achieving targets is reviewed based on performance. An example of strategy review is to find out why the facility service utilization rate continued to remain low despite introducing community education to improve antenatal care, immunization, and health seeking behavior.

FU9b:
Review facility personnel responsibilities by comparing service targets and actual performance from month to month.

If performance was not close to the target, check to see if personnel responsibilites were shifted to low-performing services in need of more human resources. If so, this would indicate that the data was used for a comparative analysis showing that some services need more assistance. Thus, decisions were made to shift existing staff responsibilities.

FU9c:
Mobilization/shifting of resources based on comparison by services

Look for data that show certain services are doing fine but others need more attention. This might call for changes in how resources are employed. Here the emphasis is more on all kinds of resources such as logistics, supplies, equipment, etc. Thus, observe whether the report showed that a decision was made to mobilize or shift these types of resources.

FU9d:
Advocacy for more resources by showing gaps in ability to meet targets

Sometimes it is not possible to mobilize or shift resources internally and help is needed from external sources. In other words it is necessary to advocate for additional resources, which is also a form of decision-making – the decision to ask help from others or higher levels. Thus, observe whether the report shows that some kind of advocacy took place to ask for more resources from higher levels, the community, or other external sources.

FU8	Is feedback, quarterly, yearly or any other report on RHIS data available, which provides guidelines/ recommendations for actions?	1.Yes	0.No	If no go to FU10
FU9	If you answered yes to question FU8, what kinds of action-oriented decisions have been made in the reports (based on RHIS data)? Please check boxes accordingly.			
	Types of decisions based on types of analyses			
FU9a	Review strategy by examining service performance target and actual performance on month to month comparisons	1.Yes	0.No	
FU9b	Review facility personnel responsibilities by examining service target and actual performance on month to month compari-	1.Yes	0.No	
FU9c	Mobilization/shifting of resources based on comparison by services	1.Yes	0.No	
FU9d	Advocacy for more resources by comparing performance by targets and showing gaps	1.Yes	0.No	

Section: Discussion and Decisions on Use of Information at Facility Level

This section deals with the use of information at the facility level. There is a sequence of events that defines "information use." First, the managers need to meet. Then, the managers discuss the available information, make a decision based on that information, and then follow-up on those decisions. This sequence of events is defined as use of information in the following questions:

FU10:
Does the facility have routine meetings for reviewing managerial or administrative matters?

This question determines whether a routine meeting mechanism exists at the facility level.

FU11:
How frequently is the meeting supposed to take place?

This question is a follow-up of FU10 to determine the interval of these meetings. We have provide response codings for the frequency of the meeting; please choose the correct coding for the response provided.

FU12:
How many times did the meeting actually take place during the last three months?

This question is a follow-up of FU11 to assess the actual number of meetings held in the last three months. It shows whether meetings were held as planned or less than planned. We have provided response codings for the frequency of the meeting; please choose the correct coding for the response provided.

FU13:
Is an official record of management meetings maintained?

It is important to keep a keep record or minutes of the meeting for follow-up and for an objective re-

view by outsiders. This record is also an important document to review whether the RHIS information was used. Thus, we want to know if the records exist before their review. If the answer is no to this question, go to FU15.

FU14:
If yes, please check the meeting records for the last three months to see if the following topics were discussed:

This question is a follow-up to FU13, as it opens the possibility to review the records to see if information was used objectively. If an official record of the management meetings exists, the record should be reviewed to answer the following questions:

FU14a:
Management of RHIS, such as data quality, reporting, or timeliness of reporting

Review the record(s) to determine whether RHIS information is used to manage the RHIS. For example, is information used to improve or maintain high data quality, ensure completeness and timeliness of data, manage RHIS processes, etc.?

FU14b:
Discussion on RHIS findings such as patient utilization, disease data, service coverage, medicine stock out

Review the record(s) to determine whether discussions took place regarding RHIS information that reflect facility performance related to health services, logistics, finance, or other information.

FU14c:
Have they made any decisions based on the above discussions?

Review the record(s) to verify whether discussions about RHIS information have led to any kind of decision-making about RHIS management or health system management.

FU14d:
Has any follow-up action taken place regarding the decisions made during the previous meetings?

Review the record(s) to ascertain whether decisions were followed up on and acted upon. What happened as a result of the actions taken?.

FU14e:
Are there any RHIS related issues or problems that were referred to the district or regional level for action?

Review the record(s) to determine whether decisions based on RHIS information were referred to higher levels for action because the district was not able to act itself.

Discussion and Decisions Based on RHIS information				
FU10	Does the facility have routine meetings for reviewing managerial or administrative matters?	1.Yes	0.No	If no, go to UI15
FU11	How frequently is the meeting supposed to take place? 4. weekly 3. After every two weeks 2. monthly 1. quarterly			
FU12	How many times did the meeting take place during the last three months? 12. 12 times 11. Between 7 and 11 6. 6 times 5. either 4 or 5 3. 3 times 2. 2 times 1. 1 time 0. none			
FU13	Is an official record of management meetings maintained?	1.Yes	0.No	If no, go to UI15
FU14	If yes, please check the meeting records for the **last three months** to see if the following topics were discussed:			
FU14a	Management of RHIS, such as data quality, reporting, or timeliness of reporting	1.Yes, observed	0. No	
FU14b	Discussion on RHIS findings such as patient utilization, disease data, or service coverage, medicine stock out	1.Yes, observed	0. No	
FU14c	Have they made any decisions based on the above discussions?	1.Yes, observed	0. No	
FU14d	Has any follow-up action taken place on the decisions made during the previous meetings?	1.Yes, observed	0. No	
FU14e	Are there any RHIS related issues/problems referred to district/regional level for actions?	1.Yes, observed	0. No	

Section: Promoting RHIS Information Use at the Facility Level

This section deals with promoting information use at the facility level. Facility level management must make it clear to staff that the use of information is valued and that mechanisms and processes are in place to facilitate information use. The following questions were developed to show whether the facilities promote the use of information. For example, can the facility level show that they have used information? Do mechanisms and processes exist, such as directives, to remind staff to use information? Has management made an effort to talk about how information has been used successfully in the past? Do they have advocacy documentation based on evidence and information? Is there evidence that districts or higher levels involve people from lower levels to discuss information use? Answers to these questions are aggregated to get an index score showing how well the use of information is promoted at a facility.

FU15:

Observed facility received annual/monthly planned targets based on RHIS information

First ask for the district annual plan and then verify that RHIS information is used for annual planning. If the district plan is not available then we assume that RHIS information is not used for developing the annual plan. *Thus, the answer **no** should be circled.*

FU16:

Do facility records for the last three months show that district/senior management issued directives concerning the use of information?

First ask for facility documentation to verify that directives were issued by the district or a higher level concerning the use of RHIS information. If documentation is not available then we assume that such directives were not issued. *Thus, the answer no should be circled.*

FU17:

Did the facility receive a district or national RHIS office newsletter or report in last three months? If yes, did the newsletter or report give examples of how information has been used successfully in the past?

First ask for the availability of the district or higher level newsletter or report and then validate whether it gives examples of how information has been used successfully in the past. If there was no newsletter or report available then we assume that the use of RHIS information was not promoted. *Thus, the answer no should be circled.*

FU18:

Does documentation exist showing the use information for advocacy purposes?

Ask for facility documentation to confirm that the facility engaged in advocacy for various issues. If the documentation is not available then we assume that RHIS information was not used for advocacy purposes. *Thus, the answer no should be circled.*

FU19:

Did the person in charge of the facility participate in meetings at the district level to discuss RHIS performance over the last three months?

First, ask for the facility records to assess whether the person in charge of the facility attended a meeting at the district or higher level to discuss and plan based on RHIS information. If no records are available then we assume that facility staff did not attend a district meeting for planning purposes. *Thus, the answer no should be circled.*

FU20:

Please give examples of how the district office uses RHIS information for health system management.
0. No examples 1. Yes (details follow)

The respondent could describe a story about information use that may be related to managing resources, planning for future activities, advocacy, a policy change, or anything else that led to either a

positive change or maintaining high performance. If these criteria or not met, circle no. If these criteria are met, ask for evidence and circle yes.

Promotion and Use of RHIS information by the district/higher level				
FU15	Observed facility received annual/monthly planned targets based on RHIS information	1.Yes	0.No	
FU16	Did facility records for the last three months show that district/senior management issued directives concerning the use of information?	1.Yes	0.No	
FU17	Did the facility receive a district or national RHIS office newsletter or report in the last three months? If yes, did the newsletter or report give examples of how information has been used successfully in the past?	1.Yes	0.No	
FU18	Does documentation exist showing the use of information for advocacy purposes?	1.Yes	0.No	
FU19	Did the person in charge of the facility participate in meetings at the district level to discuss RHIS performance over the last three months?	1.Yes	0.No	

FU20: Please give examples of how the district office uses RHIS information for health system management .

0. No examples 1. Yes (details follows)

There is evidence that drugs were ordered in sufficient amounts based on data coming from patient records and pharmacy records.

Section: Supervision by the District Health Office

This section deals with RHIS supervision quality. It captures the frequency of supervisory visits that involve checking data quality, discussing performance, decision-making assistance, and providing feedback.

There are no observations made but questions are asked about the respondent's perceptions about the supervision quality and feedback. However, in a given country, if the record keeping is well established then a record review could be done to ascertain supervision quality.

FU21:
How many times did the district supervisor visit your facility during the last three months? (check the answer)

This question determines the frequency of supervisory visits and gives some indication whether supervision exists and is adequately maintained.

If the answer is zero, go to FU26.

FU22:
Did you observe a supervisor having a checklist to assess data quality?

This question verifies whether the supervisor used a checklist for the visit. It is important to have a standardized checklist to assess supervision quality.

FU23:

Did the supervisor check the data quality?

This question establishes whether or not the supervisor actually checked the data quality.

FU24:

Did the district supervisor discuss your facility's performance based on the use of RHIS information when he/she visited your facility?

This question reveals whether the supervisor addressed facility performance (based on the use of RHIS information), which indicates that RHIS information is used for supervision and health system management.

FU25:

Did the supervisor help you make a decision based on using information from the RHIS?

This question checks whether the supervisor assists in making decisions based on RHIS information, indirectly indicating whether or not RHIS information use is promoted.

FU26:

Did the supervisor send a report/feedback/note on the last two supervisory visits?

This question assesses whether the supervisor sent back a feedback report to the facility about the last two supervisory visits. It indicates whether or not written feedback is given due attention.

Supervision by the district health office				
FU21	How many times did the district supervisor visit your facility during the last three months? (check the answer)	0. 1.√ 2 3.		If zero, go to FU26
FU22	Did you observe a supervisor having a checklist to assess data quality?	1.Yes	0.No	
FU23	Did supervisor check the data quality?	1.Yes	0.No	
FU24	Did the district supervisor discuss your facility's performance based on the use of RHIS information when he/she visited your facility?	1.Yes	0.No	
FU25	Did the supervisor help you make a decision based on using information from the RHIS?	1.Yes	0.No	
FU26	Did the supervisor send a report/feedback/note on the last two supervisory visits?	1.Yes	0.No	

FU27, FU28, FU29, FU30, and FU31 questions are left blank. These blank spaces can be used to add questions for gathering information unique to a country and not captured by PRISM tools.

FU27				
FU28				
FU29				
FU30				
FU31				

Chapter IV:

RHIS Overview/Office/Facility Checklist

Chapter IV: RHIS Overview/Office/Facility Checklist

There are four sections of this tool, which are as follows:

1. **Information systems mapping tool**
2. **Data collection and transmission review sheet**
3. **Information flow sheet**
4. **Office/facility checklist**

The first three sections are used at the national level to get an overall picture of the RHIS, while the office/facility checklist is used at both the national and lower levels to assess RHIS equipment/ supplies.

Uses

The information gathered using this tool helps:

- Identify various existing information systems and types of information collected by them
- Describe details of the data collection registers/forms and reporting forms used
- Illustrate how and when information flows among different levels of the organization, their overlap, and burden of information and work

Short description

In order to understand the existing information systems and their linkages in health sector, we need to map them and list their salient characteristics. The information systems mapping tool explains the various existing information systems, types of information collected under each system, duplication of information among systems and links (or lack thereof) in the health sector. We have provided an illustrative list of the information systems and information collected. This list can be modified to meet a particular country's needs.

The data collection and transmission sheet lists all the data collection and reporting/transmission forms. The reviewer makes comments on each form, using criteria such as appropriateness of information collected, user-friendliness, time taken to fill form out, etc.

The information flow sheet illustrates how information flows within and across information systems, where linkages are created, and the burden of information on health providers.

The facility/office checklist takes stock of available resources such as equipment, utilities, storage of

information, communication capability, and HMIS forms and registers. Specific uses of the checklist include:

- Assessing availability of resources
- Monitoring availability of resources over time
- Making management decisions to replenish resources
- Developing policy recommendations to deal with systemic resource issues

Strengths

The information systems mapping tool summarizes existing information systems in one easy-to-use-spreadsheet. It identifies particular features of single systems and commonalities among the various systems. Similarly, the information flow sheet detects overlaps in flow of information and decision points. These two tools provide opportunities to help integrate systems, reduce duplication, and streamline data collection. The data collection form and register review provides information on the relevance and user-friendliness of the forms.

The office/facility checklist provides information on the level of resources available, such as percentage of facilities that have calculators, HMIS forms, or good storage, in a given district/region/country. Specific resources can be deleted or added to the checklist, depending upon what is important for the organization. The checklist also indirectly shows efficiency of maintenance by indicating the level of functional equipment/supplies.

Limitations

Missing information and/or unavailable details may make it difficult to map all information systems. However, the emphasis should be on essentials details and finding commonalities. If more details are needed/become available?, the sheet can be modified to include them.

4.1. Information systems mapping tool

Instructions for completing the information systems mapping tool

This tool is divided into rows and columns. The rows describe the type of information system (e.g. routine service-based reporting system); the columns describe the type of information handled by each system (e.g. service utilization). The last 2 columns and last row are blank and can be used to add additional systems or types of information.

To complete the mapping tool, verify whether a given information system has the type of information described at the head of each column. If the information system includes the particularly type of information, mark an 'x' in that column. Otherwise leave it blank. If you want to collect more specific de-

tails on services and types of diseases, create a separate list rather than specifying it here.

1. **Types of information systems**
   Column 1 is a listing of existing information systems in the health sector

2. **Content of the information system**
   This section of the spreadsheet includes the different types of information handled by each information system.

3. **Specific name (if any)**
   Column 2.1 specifies the name or acronym of that system, such as HMIS,RHIS, TB IS etc.

4. **Service utilization**
   Column 2.2 assesses whether the information system collects data on service utilization. In other words, does the information system collect data on number of clients receiving services, and type of services, such as treatment, immunization, antenatal, post natal care, etc?

5. **Occurrence of selected disease(s)**
   Column 2.3 determines whether the information system collects data on the occurrence of selected diseases or disease surveillance. This includes information on new and old cases of disease but is different from epidemiological data because it is reported on a monthly basis and keeps records on the seasonality of the diseases.

6. **Disease outbreak (immediate report)**
   Column 2.4 establishes whether the information system collects data on the occurrence of reportable diseases and if immediately should the number of cases crosses the threshold of two standard deviations from the norms for that season. For example, 30 cases of diarrhea would be reported immediately because the norm is 5-8 cases per day in hot season.

7. **Financial information**
   Column 2.5 indicates which information system collects and reports expenses.

8. **Drug, contraceptive, vaccine, stock**
   Column 2.6 ascertains whether the information system collects and reports on the stock of the medicines, contraceptives, vaccines etc.

9. **Human resources**
   Column 2.7 verifies whether the information system collects and reports on the existing human resources— such a doctor, nurses, midwives, other support staff, etc.

10. Equipment/building
    Column 2.8 reveals whether the information system collects and reports on available equipment such as scissors, sterilization equipment, thermometers, etc. or the state of the facility building

such as painting needed, broken windows, etc. of the facility or higher level.

11. **Vital events**
Column 2.9 shows which information system collects and reports on vital events.

12.. Other
Columns 2.10 and 2.11 can be used to for information that is not captured in the previous columns.

An example of how to fill the tool is provided on the next page, featuring Pakistan information systems in the health sector.

1: Information System Mapping – PAKISTAN EXAMPLE											
1. Type of information system	**2. Types of information handled by each system**										
	2.1 Specific name (if any)	2.2. Service utilization	2.3. Occurrence of selected disease(s)	2.4. Disease outbreak (immediate report)	2.5. Financial information	2.6. Drug, contraceptive, vaccine, stock	2.7. Human resources	2.8. Equipment /building	2.9.Vital events	2.10. Others	2.11. Others
Routine service based reporting system	HMIS	x	X	x	x	x	x	x			
Epidemiological surveillance for notifiable infectious diseases			X	x							
Special program reporting systems (EPI)		x	X	x		vaccine only		cold chain equipment			
Special program reporting systems (TB)		x	X			TB supplies		supplies & equipment			
Special program reporting systems (Malaria)		x	X	x		malaria medicines		supplies & equipment			
Special program reporting systems (HIV/AIDS)		x		x							
Special program reporting systems (MCH)											
Special program reporting systems (specify)	LHW	x				contraceptive		supplies & equipment	births & deaths		
Special program reporting systems (specify)											
Special program reporting systems (specify)											
Community Base information system											
Administrative system (Finance)	FISA				x						
Administrative system (human resource)											
Administrative system (Training)											
Administrative system (drugs, contraceptive, vaccine, logistics)											
Administrative system (Infrastructure, equipment, transport)											
Vital Registration									x		
Other system											

X = presence of information

4.2 Data Collection and Transmission Review

Instructions for filling in the data collection and transmission review form

The tool divides the forms into data collection and data transmission categories, for example facility-based data collection tools such as patient registers, and data transmission/reporting forms such as monthly or quarterly report forms. Under each category, registers and forms are listed with space for comments about user-friendliness, complexity, space to write. and the time needed to complete the form. Additional characteristics can be added as needed. To avoid lack of standardization, all criteria for review should be listed in the tool before reviewing the data collection and transmission forms.

It is possible to request national-level data collection and transmission forms, as copies are most likely available. Sometimes procedure manuals are available as well. If such documents are available, their review is recommended as they may provide examples of easy-to-follow instructions.

2a. List facility-based data collection tools: (such as patient registers)
List all the data collection registers/forms used by the information system

2aa. Comments on tools. *Is the tool easy to use? Enough space to record data? Too time-consuming?*
For each listed tool, write comments on the forms using pre-defined criteria in adjacent cell.

2b. Data transmission/reporting forms
List all the data reporting/transmission registers/forms used by the information system

2bb. Comments on forms. *Is the form easy to use? Enough space to record data? Too time-consuming?*
For each listed form, write comments on the forms using pre-defined criteria in adjacent cell.

Example: Pakistan

2. Data collection and transmission review form	
Please list all data collection tools/forms that are used at the community/health facility level. If you need more space, please use an additional sheet of paper.	
2a. Facility-based data collection tools (such as patient registers):	2aa. Comments on tools: Is the form easy to use? Enough space to record data? Too time-consuming?
♦ Outpatient register	Easy to use after revision
♦ Inpatient register	Easy to use after revision
♦ Maternal register	Easy to use after revision
♦ Child register	Easy to use after revision
♦ Supplies/equipment register	Easy to use after revision
♦ O.T. REGISTER	Easy to use after revision
♦ OBSTETRIC REGISTER	Easy to use after revision
♦ RADIOLOGY REGISTER	Easy to use after revision
♦ DAILY BED STATEMENT REGSITER	Easy to use after revision
♦ FACILITY STAFF MEETING REGISTER	Easy to use after revision
2b. Data transmission/reporting forms	2bb. Comments on forms: Is the form easy to use? Enough space to record data? Too time-consuming?
♦ Monthly reporting form	Easy to use after revision
♦ Quarterly reporting form	Easy to use after revision
♦ Disease outbreak form	Easy to use after revision
♦	
♦	
♦	

4.3 Information Flow Sheet

Instructions for completing information flow sheet

The purpose of this information flow sheet is to describe the exchange of information between various information systems and the information system work load at various levels. It also provides information on the levels of fragmentation and integration of information systems, and identifies redundancies in existing information systems.

The information flow sheet is divided into two columns: (1) organizational level and: (2) type of information system. The organizational level column describes the various levels where the information is transmitted and received. Usually, the level reflects organizational hierarchy, from bottom to top and vice versa. List the top level and then move downwards until bottom level is specified.

Information flow sheet									
Level	**Type of information systems**								

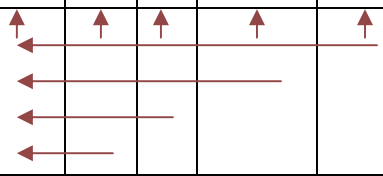
The second column describes the various existing information systems in an organization or health sector. List all existing information systems. Add new columns if needed.

Use the collected material from various information systems to complete the information flow sheet. Confirm findings by contacting the head or senior management staff of the particular information system.

Use single or double arrows to show the direction of the flow of information. Fill one system at a time. Find out if this system shares information with other systems.

An example from Pakistan shows what your work sheet will look like after arrows are entered. In this example, the information flow sheet shows that the HMIS collects information from EPI, TB, MCH and malaria programs. These information systems have their own streams of information which do not talk intermingle at higher levels. This means that some information is duplicated at the facility level, indicating fragmentation, which means that the same information is being gathered by vertical programs. At the same time, it also indicates integration, which means that many vertical programs are sending their information to be compiled into the HMIS by facility staff. Of course, this can also indicate redundancy, which means that the same information is being gathered and reported more than once. Obviously, all of this can result in an increased workload for facility staff.

Example: Pakistan

Information flow sheet									
Level	**Type of information systems**								
	HMIS	**EPI**	**TB**	**Malaria**	**MCH**	**HIV/ AIDS**	**Contraceptive**	**Administrative system (finance)**	**LHW* information system**
Central/ national level									
Regional level (Province)									
District level									
Facility level									
Community level									

Arrows reflect the theoretical direction of information flow of information. The actual situation may be different and/or more complicated.

** Lady health worker (LHW) program information system*

4.4 Facility/Office Checklist

Instructions for completing the facility/office checklist

Section – Identification

All questionnaires have identification question related to interviewer's name and title, name of the facility/office, and address of the facility/office where observations were made. Circle the facility/office types from the choices given in brackets. Lastly, circle the type of ownership of the facility/office from the choices given in brackets.

Facility/office checklist (Interview facility manager or person in charge of RHIS)
Person interviewed (name, title, organization): **John Snow, Facility Manager, Rosslyn Health Center**
Facility/Office Name: **Rosslyn Health Center**
Facility/Office Address: **1616 N. Fort Myer Drive, Arlington, VA 22209**
Facility/Office Type: (Hospital/Clinic/District office/Region office/Ministry RHIS unit, etc.)
Ownership: (Public/Private/Mixed)

Section 1. Equipment:

Please observe and make note of the equipment available in the facility/office. This section has three columns:

Hardware

We have pre-specified the equipment. However, please feel free to add new equipment if needed.

Quantity

In the second column, write the quantity of equipment available. If non-existent, write '0'.

How many are in working condition?

Write the number of functioning equipment. This should be less than or equal to the total quantity, but never more.

1. Equipment – *Please verify if the following equipment is available in the facility*		
Hardware	**Quantity**	**How many are in working condition?**
a. Computer	10	8
b. Data back-up unit (e.g. floppy, CD, zip)	0. No 1. Yes	
c. Printers	2	2
d. Modems	1	1
e. UPS	1	1
f. Generators	1	1
g. Regular telephone	5	2
h. Radio telephone	1	1
i. Internet access	0. No 1. Yes	
j. Calculator	5	5

Section 2. Utilities

a. Is there a continuous electricity supply?

Ask if the electric supply is available continuously for 24 hours. Circle the answer.

b. How often is the electricity supply interrupted?

First read all answer codes to respondent. Then circle the code that reflects the respondent's answer.

c. Is the room where the computer hardware is kept air-conditioned?

Observe (rather than ask) the answers to this question

d. Is running water available in the facility?

Observe (rather than ask) the answer to this question.

2. Utilities
a. Is there a continuous electricity supply? 1. Yes 0. No
b. How often is the electricity supply interrupted? 0. Never/occasionally 1. Once a month 2. Twice a month 3. Weekly 4. Daily
c. Is the room where the computer hardware is kept air-conditioned? 1. Yes 0. No
d. Is running water available in the facility? 1. Yes 0. No

3. Availability of registers, forms

List type of record, report or register

Before starting the fieldwork, we suggest that you decide which registers are most important. This standard list will make it easier to interpret the level of availability of selected registers/forms and will help you avoid coding errors in later analysis. List forms in the first column, one-by-one.

Have you run out of this form in the past 12 months? If so, why?

With each name of the register form, ask whether the facility/office did not have them in last 12 months. Circle appropriate answer.

If the answer is yes, ask why that form was unavailable.

3. Availability of registers, forms		
List Type of record, report or register	Have you run out of this form in the past 12 months? If so, why?	
a. General consultation	0.No	1. Yes
b. Antenatal consultation	0.No	1. Yes
c. Family planning	0.No	1. Yes Forgot to reorder from the district
d. Vaccination register	0.No	1. Yes
e. Pediatric consultation	0.No	1. Yes

B. Staff of the health facility and RHIS management

B.1. Please list the total number of persons under each category below (adapt accordingly):

For this question, we are collecting information on type and number of staff. A pre-specified list of types of staff is provided. However, this list should be modified in according to a country's needs.

Ask about each category of staff and write the total number in the corresponding column (Number).

B.3. Who fills in the HMIS monthly reports?

Specify the codes from Question B.2.

Ask which staff is responsible for filling in the HMIS monthly report. To save time, use the corresponding code in B2. Using the staff code facilitates data entry and analysis.

B.4. List those staff members who, within the past 3 years, received any training in the recording, processing, or reporting of health information, the number of trainings received, and the year of the latest training.

There are four columns asking about training.

- **Column B4a** specifies who received the training. If two nurses received the training, enter the nurse code twice in the first column ('staff code').
- **Column B4b** asks how many training the staff person attended in the last three years. Write the

number.

- **Column B4c** asks about which year the training took place. Write down the year.
- **Column B4d** specifies the type of training received. There are many answer codes for types of training. The training could be single topic or a combination of several. Write down the most appropriate training code. Please modify the types of training codes to match with past training in the country.

B. Staff of the health facility and RHIS management			
B.1. Please list total number of persons under each category below (adapt accordingly):			
B.2. Title/ post	Number		Number
1. Medical officer	1	10. Health educator	1
2. Comprehensive nurse— registered	2	11. Health inspector	0
3. Comprehensive nurse— enrolled	2	12. Laboratory technician	1
4. Nursing assistant	1	13. Public health dental assistant	0
5. Clinical officer	1	14. Anesthetic officer	0
6. Laboratory assistant	1	15. Midwife	4
7. Health assistant	0	16. Support staff	2
8. Dispenser	1	17. Other (specify)	0
9. Health information assistant	1		
B.3. Who fills in the HMIS monthly reports? *Specify using codes from response to question B.2.* #7			
B.4. List those staff members who, within the past 3 years, received any training in the recording, processing, or reporting of health information, the number of trainings received, and the year of the latest training.			
B.4.a. Title or Post (Coding from question B.2)	B.4.b. How many trainings courses/ sessions did this person received in the past three years?	B.4.c. Year of last training	B.4.d. Subject(s) of last training: 1. data collection 2. data analysis 3. Data display/report 4. 1&2 5. 1&3 6. 2&3 7. 1,2 & 3
1. #1	2	2008	7
2. #2	1	2008	1
3. #3	1	2008	1
4.#12	1	2008	7
5. #9	3	2009	7

BB1. For district or higher level only

This section is for district (including sub-districts) or higher level only, as it captures RHIS human resources for district or higher level.

BB1.1 Total number of persons working in district HMIS office, including sub-districts

Ask how many people are working in HMIS at district and sub-district levels. In some countries, districts might be divided into sub-districts for administrative purposes, with staff at each sub-district assigned to collect and transmitt data from the facilities. We want to know the total number of *staff involved in HMIS at district and sub-district levels.*

BB1.2 Total number of persons working in district HMIS office excluding sub-district staff.

Ask how many people are working in HMIS at district-level only. This number should be less than total staff at district and sub-district levels.

BB1.3 Total number of district and sub-district staff in district HMIS office trained to collect, verify, and analyze information.

Ask how many people working in HMIS at district level only *were trained on different aspects of HMIS, such as data collection, verification of data quality, and analysis.*

BB1. Staff at district or higher level ONLY	
Staffing	
BB.1 Total number of persons working in district HMIS office, including sub-districts-staff?	5
BB.2 Total number of persons working in district HMIS office, excluding sub-districts- staff?	1
BB.3 Total number of staff in district and sub-district HMIS offices trained to collect, verify, and analyze information	5

Chapter V:

RHIS Management Assessment Tools (MAT)

Chapter V: RHIS Management Assessment Tools (MAT)

Uses

- Assess the level of management functions such as governance, planning, training, supervision, quality standards, and finance
- Compare the level of management functions and set priorities for actions
- Conduct comparative analysis to assess how management functions relate to RHIS performance, RHIS processes, promotion of culture of information, and behavioral determinants

Short Description

Management of a system is about managing resources and functions to produce better outcomes. RHIS management is no different. Thus, we have defined RHIS Management as "the presence of mechanisms for managing RHIS functions and resources effectively for better RHIS performance." RHIS management functions are comprised of RHIS governance, planning, training, supervision, finances, logistics, and use of performance improvement tools. As logistics are covered under the facility/office checklist and RHIS overview, no information about logistics is included in this tool. It can be modified to include important functions or country-specific RHIS or other details as directed by senior management.

Strengths

The MAT helps determine the levels of RHIS management support services. It also helps senior management understand the strengths and weaknesses of RHIS management. The information can also be used to develop action plans, advocate for more resources, or improve RHIS management practices.

Limitations

The MAT is restricted to major management support services.

Instructions for completing the management assessment tool (MAT)

Section – Identification

All questionnaires have identification questions related to district name, interviewer's name and title, assessor name and date of assessment like the district form. However the MAT adds the name of the facility and type of facility. Type of facility could be primary care facility, MCH center, hospital, community health center, or categories of health facilities in a given country. Please use these categories.

List the categories under 'type' column, as it helps in data entry and analysis.

Please note that questions marked with two asterisks are not for the facility level. However, all questions should be asked at the district or higher levels.

Use of Information District RHIS Management Assessment Tool

(Observation at facility and higher levels)

Name of the District: **Anacostia** Date of Assessment: **Sept 30, 2009**

Name of the Assessor: **John Snow** Name and Title of Person interviewed:

***Starred questions (printed in green) are not to be asked at the facility level.**

MAT1. Name of the facility **Hillcrest Community Health Center**	MAT2. Name of assessor: **John Snow**
MAT3. Name of the district: **Washington**	MAT4. Date of assessment: **November 13, 2009**

Section - Governance

This section addresses whether documentation is available on the RHIS governance structure.

MATG1 - Is RHIS mission displayed at prominent position(s)?

Observe whether the RHIS/HMIS mission is displayed in the facility/office where it is visible to visitors.

****MATG2 - Presence of management structure for dealing with RHIS-related strategic and policy decisions at district and higher levels?***

Observe whether there is a document available at district or higher level describing RHIS management structure and roles and responsibilities for decision making at various levels.

MATG3- Presence of an updated (within last year) district health management organizational chart, showing functions related to RHIS/health information?

Observe whether an RHIS organizational chart that shows all levels, from bottom- up is available.

*****MATG4 – Is there documentation (e.g. a distribution list), which shows that the most recent RHIS monthly/ quarterly report has been disseminated?***

Observe whether a distribution list exists to disseminate various RHIS reports at district or higher level.

MATG1	Is RHIS mission displayed in prominent position(s)?	0 No	1 Yes
MATG2	Presence of management structure for dealing with RHIS-related strategic and policy decisions at district and higher levels?	0 No	1 Yes
MATG3	Presence of an updated (within last year) district health management organizational chart, showing functions related to RHIS/health information?	0 No	1 Yes
MATG4	Is there documentation (e.g. a distribution list), which shows that the most recent RHIS monthly/quarterly report has been disseminated?	0 No	1 Yes

Section - Planning

This section addresses whether documentation on the RHIS planning functions is available.

MATP1 - Presence of recent (written w/in last 3 years) RHIS situation analysis?

Observe whether there is a RHIS situation analysis or any available report that describes the strengths and weakness of the RHIS and has been published within the last 3 years. The premise of this question is that planning is based on identifying the issues and evidence supporting it. Therefore, there should be some documentation available for planning.

***MATP2 - Presence of RHIS 5 year plan at district or higher level**

Observe whether there is an RHIS 5-year plan at the district or higher level. This indicates that long-term RHIS planning exists, which is critical for sustaining the system.

MATP3 - Presence of RHIS targets at facility and higher level

Observe whether RHIS targets are communicated in writing to facility or higher level staff. Planning is not only about resources; it is about achieving targets/results. We want to know if targets are set and communicated to relevant staff.

MATP1	Presence of recent (written w/in last 3 years) RHIS situation analysis?	0 No	1 Yes
MATP2	Presence of RHIS 5-year plan at district or higher level?	0 No	1 Yes
MATP3	Presence of RHIS targets at facility and higher level?	0 No	1 Yes

Section – Quality Standards

This section addresses the availability of RHIS quality standards. Here, the intention is to provide evidence that a country's RHIS values quality standards. This tool does not measure how good the standards are, only whether they exist. MATQ1 and MATQ3 apply to district or higher level and MATPQ2 is applicable only to the facility level.

***MATQ1 - Presence of a copy of RHIS standards at district or higher levels?**

Observe whether a copy of the RHIS standards is available at district or higher level

MATQ2 - Presence of a copy of RHIS standards at facility?

Observe whether there is a copy of the quality standards at the facility level. This indicates that the district or higher level has quality standards and shares them with the lower level.

MATQ3 - Presence of performance improvement tools (flow chart, control chart, etc.) at facility or higher level?

Observe whether facility or higher level use performance improvement tools to keep a high performance level. Evidence that any performance improvement tools, such as a cause and effect diagram, flow chart, control chart, priority matrix, etc., are used counts as a 'yes'.

MATQ1	Presence of a copy of RHIS standards at district or higher levels?	0 No	1 Yes
MATQ2	Presence of RHIS 5-year plan at district or higher level?	0 No	1 Yes
MATQ3	Presence of RHIS targets at facility and higher level?	0 No	1 Yes

Section—Training

This section addresses whether documentation is available for RHIS training. Training—formal or on-the-job—is important for maintaining and upgrading RHIS skills.

MATT1: Does the facility/district have a RHIS training manual?

Observe whether a RHIS training manual is available at facility or higher level.

MATT2: Presence of mechanisms for on-job RHIS training at district or higher level (see documentation.)

Observe whether documentation is available to provide instructions to district or higher level managers on how to conduct on-the-job training.

MATT3: Presence of schedule for planned training

Observe whether the facility or higher level has a schedule for training for one or more years. This question explores in more depth whether a training schedule is available and communicated from higher levels to the lower level. We want to know how far in advance RHIS training is planned.

MATT1	Does the facility/district have a RHIS training manual?		0 No	1 Yes
MATT2	Presence of mechanisms for on-job RHIS training? (see documentation)		0 No	1 Yes
MATT3	Presence of schedule for planned training?	0 No	1 Yes, for one year	2. Yes, for more than one year

Section - Supervision

This section addresses RHIS supervision functions. All questions apply to facility or higher level, except for MATS1, which is applicable only at district or higher level.

MATS1 - Presence of RHIS supervisory checklist

Observe whether the RHIS supervisory checklist is available. Please make sure that this list is not a general supervisory checklist but is specific to RHIS or has a section on RHIS issues. If a RHIS section is not included, circle 'no'.

MATS2 - Presence of schedule for RHIS supervisory visit?

Observe whether the facility or higher level has a schedule of RHIS supervisory visits.

MATS3 - Presence of supervisory reports?

Observe whether the facility or higher level has a copy of a RHIS supervisory report. Again, you are not looking for a general supervisory report but one that is specific to RHIS or has a section on RHIS. If a RHIS section is not included, circle no.

MATS1	Presence of RHIS supervisory checklist?	0 No	1 Yes
MATS2	Presence of schedule for RHIS supervisory visit?	0 No	1 Yes
MATS3	Presence of supervisory reports?	0 No	1 Yes

Section - Finance

This section assesses the existence of financial documentation. It is assumed that availability of RHIS financial records indirectly shows that attention is paid to meeting RHIS financial needs.

MATF1- Presence of RHIS-related expense register?

Observe if the facility or higher level keeps RHIS-related expense records.

****MATF2- Presence of mechanisms for RHIS-generating funds?***

Observe if the district or higher level keeps records on how they RHIS funds are generated. For example, the district or higher level can ask private sector organizations to give funds for printing RHIS forms and registers in exchange for the presence of the organizations' logos on forms.

MATF3 - Presence of RHIS monthly/quarterly financial report?

Observe if a monthly or quarterly RHIS financial report is prepared and available. The duration of report may be modified according to a county's specific context.

MATF4 - Presence of long-term financial plan for supporting RHIS activities?

Observe if a RHIS financial plan is available at district or higher level. The duration of plan should be more than one year or according to a county requirement.

MATF1	Presence of RHIS-related register?	0 No	1 Yes
MATF2	Presence of mechanisms for RHIS-generating funds?	0 No	1 Yes
MATF3	Presence of RHIS monthly/quarterly financial report?	0 No	1 Yes
MATF4	Presence of long-term financial plan for supporting activities?	0 No	1 Yes

Chapter VI:

RHIS Organizational and Behavioral Assessment Tool (OBAT)

Chapter VI: RHIS Organizational and Behavioral Assessment Tool (OBAT)

Uses

The organizational behavioral assessment tool (OBAT) is used to:

1. Assess the behavioral factors on HIS performance, such as knowledge, data demand, HIS task competence, problem solving, and motivation.
2. Assess the overall level of a culture of information, particularly to estimate the promotion level of various aspects of a culture of information:
    - Emphasis on data quality
    - Use of information
    - Evidence-based decision making
    - Problem solving
    - Feedback from staff and community
    - Sense of responsibility
    - Empowerment and accountability
3. Assess effectiveness of a reward system.

Short Description

The organizational behavioral assessment tool (OBAT) assesses perceptions about the organization through a rating scale, while task-competency and problem-solving skills are estimated by responses to problems given in a written test. The culture of information is defined as "the capacity and control to promote values and beliefs among members of an organization for collection, analysis, and use of information to accomplish its goals and mission." The OBAT can be used alone or as part of the PRISM toolkit to determine perceived levels of the promotion of a culture of information and behavioral factors, such as levels of motivation, RHIS task confidence levels, and RHIS task competence. This information provides insight into the strengths and weaknesses in the organizational processes for promoting a culture of information and behavioral factors to perform RHIS tasks.

The OBAT can also be used with the diagnostic tool to show the comparisons or association of organization and behavioral factors with RHIS processes and performance (data quality and use of information).

Strengths

The OBAT applies an innovative approach that quantifies the promotion of a culture of information and relates it to behavioral determinants such as motivation and RHIS tasks competence levels, and RHIS performance. It shows how senior management might support the processes of creation and

strengthening of knowledge and values that promote better RHIS performance, thus shifting the responsibilities to system processes rather than individuals.

Limitations

The OBAT addresses major knowledge, skills and perceptions of the promotion of a culture of information on a broad scale, and needs to be adapted to include other important areas as identified by senior management.

Instruction for completing the OBAT

To be filled by staff and management at all levels.

Introduction

This survey is part of the (*please identify the institution*)'s effort to improve management information systems in the health sector. The objective of this survey is to help develop interventions for improving information systems and use of information. Please express your opinion honestly. Your responses will remain confidential and will not be shared with anyone. Results will be aggregated and presented in a table form and can not be linked back to individuals. We appreciate your assistance and cooperation in completing this study.

Thank you.

An example of the completed form follows. The responses are in bold.

IDI. *Name of facility* ***QALAN***

Write in the name of the facility where you are working.

ID2. *District* ***FALAN***

Write in the name of the district where you are working.

DD1. *Title of the person filling the questionnaire (circle answer)*

(Make these categories appropriate to the host country before the start of the survey)

1. Provincial DG
2. Provincial HMIS focal person
3. District HO
4. District HMIS focal person
5. **Facility in charge**
6. Other facility staff (specify) ----------

DD2. *Age* ***-------48----------***

Write in your age (number of years)

DD3. *Sex* ***1. Male 2.Female***

Circle the appropriate answer

DD4. *Education* ***(Make these categories appropriate to the host country)***

How many years of education have you received? Circle the appropriate answer

1. Less than 10 years
2. 10 years
3. Intermediate (11-12 years)
4. **Bachelor (13-14 years)**
5. Master (15-16 years)
6. PhD or doctorate

DD5. *Years of employment* ***--------15----------***

How long have you been employed by the department? Write in years. If 1 or less than 1 year, write' 1'

DD6. *Did you receive any training in HMIS related activities in last six months?* ***0. No*** *1.Yes*

Circle the appropriate answer

We would like to know your opinion about how certain activities carried out by _(what goes here, person's name? if yes, which person?)_____. There are no right or wrong answers. The scale is about assessing the intensity of your beliefs and ranges from "strongly disagree" (1), to "strongly agree" (7). First, determine whether you agree or disagree with the statement. Second, decide about the intensity of your agreement or disagreement. If you disagree with statement then choose a number from the left side of the scale and determine how much you disagree: strongly disagree (1), disagree (2), or somewhat disagree (3), and circle the appropriate answer. If you are not sure of the intensity of belief or think that you neither disagree nor agree, circle 4. If you agree with the statement, then choose a number from the right side of the scale and determine how much you agree: somewhat agree (5), agree (6), or strongly agree (7), and circle the appropriate answer. Please note that you might agree or disagree with all the statements and similarly you might not have the same intensity of agreement or disagreement and thus variations are expected in expressing your agreement or disagreement. We encourage you to express those variations in your beliefs.

This information will remain confidential and will not be shared with anyone. Results will be presented as an aggregated data report. Please be frank and choose your answer honestly.

Strongly disagree	Disagree	Somewhat Disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

To what extent, on a scale of 1-7, do you agree with the following?

Please read the question combining the ***heading*** *with* ***statement*** *such as 'In the health department, decisions are based on or personal liking' or 'In the health department, superiors* ***s****eek feedback from concerned persons', or 'In the health department, staff are punctual.'*

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly Agree
To what extent are decisions in the health department based on:							
D1. Personal preference/favoritism	1	2	**3**	4	5	6	7
(Because a superior likes one person more than another)							
D2. Superiors' directives	1	2	3	4	**5**	6	7
(Because superior said so)							
D3. Evidence/facts	1	2	3	4	5	**6**	7
(Verifiable, proven)							
D4. Political agendas/interference	**1**	2	3	4	5	6	7
(Governmental, but not necessarily best or related)							
D5. Comparing data with strategic health objectives	1	2	3	4	5	6	**7**
(Does the data back up the objectives?)							
D6. Actual health needs	1	2	3	4	5	**6**	7
(Of the population)							
D7. Cost consideration	1	2	3	**4**	5	6	7
(*Whether something is seen as affordable or not)*							

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly Agree
To what extent do superiors in the health department:							
S1. Seek feedback from concerned/affected staff	1	2	3	4	**5**	6	7
(Consult with staff and/or other concerned people)							
S2. Emphasize data quality in monthly reports	1	2	3	4	5	**6**	7
(Care about accuracy and/or quality of data in monthly reports)							
S3. Discuss conflicts openly	1	2	3	**4**	5	6	7
(Address issues openly with staff to help resolve them)							
S4. Seek feedback from concerned community	1	2	**3**	4	5	6	7
(Ask members of the community served what it needs/wants)							
S5. Use HMIS data for setting targets & monitoring	1	2	3	**4**	5	6	7
(Actual HMIS data is used to set and monitor targets)							
S6. Check data quality at the facility & higher level regularly	1	2	3	4	5	**6**	7
(Oversee/review/check data)							
S7. Provide regular feedback to staff through report-based evidence	1	2	**3**	4	5	6	7
(*Whether something is seen as affordable or not)*							
S8. Report on data regularly	1	**2**	3	4	5	6	7
(*Talk to higher level staff about accuracy of data)*							

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly Agree
To what extent are/do health department staff:							
P1. Punctual	1	2	3	4	**5**	6	7
(Arrive/depart on time)							
P2. Document their activities/keep records	1	2	**3**	4	5	6	7
(Monitor themselves)							
P3. Committed to improving health status of the target population	1	2	3	4	**5**	6	7
(Care about the overall mission)							
P4. Set appropriate and realistic goals for themselves?	1	2	3	**4**	5	6	7
(Have a reasonable sense of what they can and should do)							
P5. Feel guilty for not accomplishing set target/ performance goals	1	2	**3**	4	5	6	7
(Feel bad when they don't do what they set out to do)							
P6. Get rewarded for good work?	1	2	**3**	4	5	6	7
(Praise, notice, more responsibility and/or benefits)							
P7. Use HMIS data for day-to-day management of the facility and district?	1	2	3	4	**5**	6	7
(Use HMIS data in everyday management)							
P8. Display data for monitoring their set target?	1	2	3	4	**5**	6	7
(*Are public or transparent with their progress?)*							
P9. Gather data to find the root cause(s) of problems?	**1**	2	3	4	5	6	7
(Do all they can to understand problems)							
P10. Develop appropriate criteria for selecting interventions for a given problem?	1	**2**	3	4	5	6	7
(*Make reasonable—doable, technically feasible, administratively manageable, technically feasible—guidelines when selecting interventions?)*							

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly Agree
To what extent are/do health department staff:							
P11. Can develop appropriate outcomes for a particular intervention	1	**2**	3	4	5	6	7
(Able to develop possible outcome(s) of a particular intervention?)							
P12. Can evaluate whether the targets or outcomes have been achieved?	**1**	2	3	4	5	6	7
(Assess achievement of targets/outcomes of an intervention?)							
P13. Are empowered to make decisions?	1	2	3	**4**	5	6	7
(Feel encouraged to make decisions on their own)							
P14. Able to say 'no' to superiors and colleagues for demands/decisions not supported by evidence?	1	**2**	3	4	5	6	7
(Can object to decisions that are not supported by data/evidence?)							
P15. Are made accountable for poor performance?	**1**	2	3	4	5	6	7
(Face consequences for unsatisfactory work?)							
P16. Use HMIS data for community education and mobilization?	1	2	3	**4**	5	6	7
(For example, if the HMIS shows low levels of immunization, can staff educate people about seeking care for preventive and curative services?)							
P17. Admit mistakes for taking corrective actions?	1	2	**3**	4	5	6	7
(Acknowledge mistakes in identifying and implementing interventions or solutions. In other words, to what extent is it ok to make mistakes while implementing an intervention?)							

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly Agree
Personal							
BC1. Collecting information that is not used for decision making discourages me.	1	2	3	4	5	**6**	7
(To what extent do I feel discouraged when I collect information that is not used for decision making?)							
BC2. Collecting information bores me.	1	2	**3**	4	5	6	7
BC3. Collecting information is meaningful to me.	1	2	3	4	**5**	6	7
BC4. Collecting information gives me the feeling that data is needed for monitoring facility performance.	1	2	3	4	5	**6**	7
(I feel that collecting information is necessary for monitoring facility performance.)							
BC5. Collecting information is forced on me.	1	**2**	3	4	5	6	7
(I collect information against my will.)							
BC6. Collecting information is appreciated by co-workers and superiors	1	2	3	**4**	5	6	7
(Co-workers and superiors appreciate collection of information.)							

U1.Describe at least three reasons for collecting data on monthly basis on the following:

U1A. Diseases

1.

2.

3.

U1B. Immunization

1.

2.

3.

U1C. Why does the target area need population data?

1.

2.

3.

U2. Describe at least three ways of checking data quality.

1.

2.

3.

Dr. Akram, EDO Health, read a recent district report which showed that the data quality was 40%. He was very disturbed by it. "I need to take action," he said. He paced back and forth thinking about how he could improve data quality. After some time, he calmed down and wrote an action plan. Describe how Dr. Akram defined the problem and what major activities he might have included in his action plan for improving data quality.

PSa. Definition of the problem

PSb. Major activities

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

SELF-EFFICACY

This part of the questionnaire is about your confidence in performing tasks related to health information systems. High confidence indicates that you can perform the task, while low confidence means room for improvement or training. We are interested in knowing how confident you feel in performing HMIS-related tasks. Please be frank and rate your confidence honestly.

On a scale of 0 to 100%, please rate your confidence in accomplishing the following HMIS activities. (For example, if you are very confident select 100%)

Rate your confidence for each situation according to a percentage from the following scale:

	0 10 20 30 40 50 60 70 80 90 100
SE1. I can check data accuracy	0 10 20 30 40 50 60 70 80 90 100
SE2. I can calculate percentages/rates correctly	0 10 20 30 40 50 60 70 80 90 100
SE3. I can plot data by months or years	0 10 20 30 40 50 60 70 80 90 100
SE4. I can compute trends from bar charts	0 10 20 30 40 50 60 70 80 90 100
SE5. I can explain findings & their implications	0 10 20 30 40 50 60 70 80 90 100
SE6. I can use data for identifying gaps and setting targets	0 10 20 30 40 50 60 70 80 90 100
SE7. I can use data for making various types of decisions and providing feedback	0 10 20 30 40 50 60 70 80 90 100

Please solve the following problems about calculating percentages, rates, and plotting and interpreting information.

C1. The estimated number of pregnant mothers is 340. Antenatal clinics have registered 170 pregnant mothers. What percent of pregnant mothers are attending antenatal clinics?

C2.The full immunization coverage for 12-23 month-old children was found to be 60%, 50%, 30%, 40%, 40% for years 1997, 1998, 1999, 2000, and 2001, respectively.

C2a. Develop a bar chart for coverage percentages by years

C2b. Explain the findings of the bar chart

C2c. Did you find a trend in the data? Explain your answer

C2d. Provide at least one use of above chart findings at:

UD1. Facility level

UD2. District level

UD3. Policy level

UD4. Community level

C3. A district has 5,000 children who are under five-years-old. A survey found that 500 children (under five-years-old) in this district were malnourished. What is the malnutrition rate for children under five years old in this district?

C4. If the malnutrition rate in children less than 2-years-old is 20% and the total number of children who are less than 2-years-old is 10,000, how many children are malnourished?

Chapter VII:

Summary of the Collected Information Using PRISM Tools

Chapter VII: Summary of the Collected Information Using PRISM Tools

What Kinds of Information are Collected Using the PRISM Tools?

The PRISM tools can answer many questions about a RHIS, including the level of data quality and use of information, how well a culture of information is promoted, levels of resources availability, levels of perceived confidence to perform RHIS tasks, observed competence for RHIS tasks, etc. Each tool provides specific information as summarized in Table X.

When two or more PRISM tools are used, it is possible to compare different parts of the RHIS and analyze if they are working in harmony or if gaps exist that are affecting performance.

With an appropriate sample size, the use of all the PRISM tools provides a comprehensive picture of the RHIS. It allows us to test relationships among the various components of the RHIS as well as conduct inferential analyses. The analyses can help answer the following questions:

1. To what extent does the quality of RHIS data (completeness, timeliness, and accuracy) affect the level of information use?
2. To what extent do RHIS processes (transmission, processing, and analysis) affect RHIS performance?
3. To what extent do health managers' problem-solving skills and level of understanding about how to use information lead to RHIS performance improvement?
4. To what extent do behavioral factors such as motivation, perceived confidence level to perform RHIS-related tasks, data demand, and competence in performing RHIS-related tasks affect RHIS performance?
5. To what extent do technical factors such as information technology, system design, complexity of forms, etc., affect RHIS performance?
6. To what extent do organizational factors such as governance, finance, training, supervision, and a culture of information influence RHIS performance?

Do technical, organizational, and behavioral determinants influence RHIS performance directly or indirectly through behavioral factors or through RHIS processes? Or, do the determinants interact first with each other before influencing RHIS performance? (e.g. Training increases level of confidence and competency, which in turn affects RHIS performance.)

Table 1: Summary of Information Collected via the PRISM Tools by Unit of Analysis			
Type of Tool	**Content**	**District or Higher Level**	**Facility or Lower Level**
RHIS Performance Diagnostic Tool	*A. RHIS performance* • Data quality: completeness, timeliness, and accuracy • Information use: report produced, discussion, decision, referral for action at higher level, advocacy	√ √	√ √
	B. Processes • Collection, transmission, processing/analysis, display, data quality check, and feedback	√	√
	C. Promotion of culture of information • Action plan, role modeling, newsletter, advocacy	√	√
	D. Supervision quality • Frequency, discussion, checking quality, assist facility staff in using information for decision-making		√
	E. Technical determinants • Complexity of forms, information technology, integration	√	
RHIS Overview, Office/Facility Checklist	A. RHIS Overview • Mapping – list information systems, their overlap and distinctions • Data collection and transmission – various forms and their user-friendliness • Information flow chart – communication pattern	√ √ √	
	B. Office/Facility Checklist • Availability of equipment, utilities, register/forms, data • Availability of human resources, % trained, types of training	√ √	√ √
RHIS Organizational and Behavioral Assessment Tool (OBAT)	*A. Behavioral* • self-efficacy (confidence) for RHIS tasks • RHIS tasks competence • motivation • knowledge of RHIS rationale, methods of checking data accuracy • problem solving skills	√ √	√ √
	B. Promotion of a culture of information • emphasis on data quality • use of RHIS information • evidence based decision-making • problem solving, feedback • sense of responsibility • empowerment/accountability		
	C. *Reward*		
RHIS Management Assessment Tool (MAT)	*RHIS management functions* • Governance, planning, training, supervision, quality, finance	√	√

Chapter VIII:

How to Apply PRISM

Chapter III: How to Apply PRISM

1. What research and evaluation design is needed to use the prism tools?

The most appropriate study design is for using the PRISM tools depends on the research or evaluation question(s). For example:

- Use cross-sectional observational surveys for understanding the existing RHIS.
- Use pre and post tests or pre and post tests with a control group to assess change after implementing PRISM interventions. More sophisticated study designs can be used to avoid external and internal validity biases.
- Use time series to observe change over time. This can only be used for monitoring the progress or change in a particular part(s) of the information system, monitoring changes in data quality, and monitoring the use of information over time.

2. Which Types of Organizations Are the Most Suitable for Using The PRISM Tools?

The PRISM tools can be used in any health or other type of organizational setting, including, but not limited to a Ministry of Health, health district, NGO, private sector organization, educational insitution, etc. Since the emphasis is on assessing organizational processes for strengthening HMIS, the nature of the organization does not affect the use of the tools. The protocol has been applied in Pakistan, Uganda, South Africa, Mexico, Paraguay, and Honduras in public health and education sector settings.

Similarly, the tools can be used for assessing community based information systems, as long as there is clarity regarding who owns the information system.

What Kind of Sampling Technique and Sample Size is Needed?

Sampling method and sample size

Probability samples are better than non-probability samples because every unit of analysis (e.g. facilities, districts, etc.) has the chance to be selected. Also, because probability samples are randomly selected, they produce unbiased estimates of the population. Any kind of probably sampling is preferred because it provides the ability to generalize the findings across the total population. Two commonly used sampling techniques are 30 cluster sampling and lot quality assurance sampling (LQAS).

Lot quality assurance sampling (LQAS) is the preferred choice because it is based on random sampling with a small sample size. To answer the question of whether a certain performance target (e .g. 80% data quality and 60% use of information) is achieved or not, a sample size of 19 or less could eas-

ily detect whether the target has been achieved. For example, if the target is 60% and sample size is 19, then we need to have at least nine facilities that have reached the target to say that the target has been achieved (see Appendix A).

However, if a standard or target is not available or a baseline estimate is needed to set the target, then we need a bigger sample size. By combining the five lots or administrative areas of 19 facilities, it is possible to have a sample size of 95, which is the equivalent of finding an object of interest with 50% probability, 95% confidence, and a margin of error of 10%.[4] It provides not only an average statistic of the variable, but it also provides information about whether lots (districts, supervisory areas, divisions of organization) are below or above the average. This large sample size is also adequate if information needs to be broken down to the supervisory level or if hypotheses need to be tested.[5] LQAS can also be used to set priorities among services and selected areas after studying the results, which is not possible when using 30 cluster sampling.

Thirty cluster sampling can be used when comparisons among supervisory areas (lots) are of no interest, and only estimates are needed. However, the sample size[6] is doubled due to design effect.

Use of convenience samples also provides useful information with the caveat that generalized results are limited. Various scenarios exist where one can combine random and convenience samples. For example, a certain number of districts are chosen for a specific reason. Randomly selecting facilities within those districts would provide objective and valid estimates. Despite providing valid information about the districts, the results cannot be generalized for other districts, unless those districts have similar characteristics.

Common Scenarios

Country estimate – PRISM is usually used for assessing routine information system performance in a given country. The first choice is to take a representative sample, using existing administrative units and selecting randomly a minimum of five administrative units. It could be increased to ten, if more funds are available.

Second, it is possible that each administrative unit has many districts/counties. It is not possible to visit all of them. Thus, it is better to sample them as well. Make sure that each district has more than 30 facilities. Randomly select one district and randomly select 19 facilities in that district for the survey. However, if the district has less than 20 facilities, it is better to combine two districts together un-

[4] Sample size calculation based on random sample of binomial distribution - $N= (z^2pq)/d^2$; P=0.5, d=10%, z=95% confidence interval. Please note that in this formula we have used probability of finding the object of interest as 50%, as we do not know the prevalence of object of interest. This probability gives the largest sample size 96. The sample size becomes smaller when the probability of finding object of interest increases.

[5] Cohen, J. Cohen, P. (1983) Applied Multiple Regression/Correlation Analysis For Behavioral Sciences, Second edition, LEA publisher.

[6] Sample size of 96 becomes 192 with a design effect of 2. However, to simplify, a 30 cluster sampling takes 7 sampling units per cluster and make the sample size to 210.

til all districts are distributed in groups of two. Randomly select one group of districts and survey 19 facilities randomly.

At times, the administrative area/regions are selected conveniently or funds are not available to travel over the country and thus, random selection is avoided. In that case, country estimates are triangulated with other sources of information in order to generalize results.

Provincial estimate – If the decision is to work only in one region or province and estimate information system performance in that region/province, one can follow the steps for a country estimate.

District estimate- District routine information system performance can easily be assessed by randomly selecting 19 facilities, if the total facilities are 30 or more. If the facilities are 30 or less, one can use a census of the facilities or a minimum of 12 facilities for using the LQAS table.

3. Sources of data

To identify organizational and behavioral factors affecting the information system in an organization or unit of an organization, the tool should be administered to a cross-sectional sample of members of the unit of interest. The health department should be treated as an organization with different levels of hierarchy. Therefore, it is important to sample staff (care providers as well as managers) at various levels to get a representative sample of the organization.

- Facility level:
    - Both first level and referral level
    - Facility in-charge and at least one more staff involved in data collection
- District level:
    - District health officer and at least one supervisor
    - HIS focal person
- Central level:
    - At least three relevant staff persons
    - Also sample regional or provincial levels, if they exist, between district and central levels

4. What Resources Are Needed to Use PRISM tools?

PRISM tools are like any survey questionnaire. However, in addition to employing interview techniques, PRISM uses record reviews, observations, and pencil and paper (written) tests. There are no particular skills needed to use PRISM tools, except having good communication and observation skills. Familiarity with a health system is desirable. However, we recommend a day and a half training on the tools before going out in the field to use them.

Table 8.1 describes the various skills needed for using the various PRISM tools. The level of effort column illustrates what a data collector is supposed to do. The use of the total set of PRISM tools in a setting requires between 90 to 120 minutes depending upon the patient/work load of the health facility, district, or higher-level office. We recommend that data collectors explain to the facility/office staff that they are able to review the records without help from staff. However, staff are needed to fill out the OBAT. This way, the record review and the OBAT can take place simultaneously, which reduces the time spent at the facility/office.

Table 8.1: Required Resources for Use of PRISM Tool

Type of Tool	Skill level	Level of effort	Time required	Use alone or in combination
RHIS Performance Diagnostic Tool	The data collector should be able to communicate with concerned staff and make objective observations, use basic math skills, and avoid personal preferences.	The reviewer requires the cooperation of the organizational staff for making observations and reviewing the facility records. Obtain registers and reporting form for comparisons Obtain office records,	15-30 minutes depending upon the case load at the facility.	**Alone,** if the objective is to assess data quality and information use **In Combination** with other tools if both RHIS performance and its determinants are assessed
RHIS Management Assessment Tool **(MAT)**	The data collector should be able to communicate with concerned staff and make objective observations, use basic math skills, and avoid personal preferences.	The reviewer requires the cooperation of the organizational staff for making observations and reviewing the facility records.	5-10 minutes, depending upon the availability of records	**MAT** could be used alone if only RHIS management functions need to be assessed. MAT can be combined with other tools to study their linkages with performance, processes, and other determinants

All PRISM tools are used when a comprehensive picture of the RHIS is needed and the relationship between RHIS performance and RHIS processes (technical, behavioral and organizational determinants) is sought. If this is not needed, then the relevant tool should be used for whatever aspect of the RHIS needs to be assessed, as described in last column of Table 8.1.

Table 8.1: Required Resources for Use of PRISM Tool				
Type of Tool	**Skill level**	**Level of effort**	**Time required**	**Use alone or in combination**
RHIS Overview, Office/ Facility Checklist	For both tools, the data collector should be able to communicate with concerned staff and make objective observations, avoiding personal preferences.	**For RHIS overview** ***The reviewer requires cooperation among various staff from different information systems to provide data collection and reporting forms, procedures manuals, transmission guidelines, etc. ***** The reviewer needs time to review information and prepare mapping and information sheets. ***** The reviewer creates consensus among the stakeholders of the various systems so that mapping and information flow sheets reflect the reality of the individual or group meeting. **For office/facility checklist** The reviewer requires the cooperation of the organizational staff for making observations and reviewing the facility records.	One to three days for RHIS overview, depending upon availability of all required materials for review 10-15 minutes for checklist depending upon the availability of records	RHIS overview is **always done alone** at regional or national level, where standardized forms and registers are available **For office/facility, the checklist** could be used alone if only resources are assessed. It can be combined with other tools to study their linkages with performance, processes, and
RHIS Organizational and Behavioral Assessment Tool **(OBAT)**	The data collector role only clarifies the questions if needed. It is a self-administered tool. It is assumed that officials and staff have reading and writing skills along with RHIS skills to express their opinions and solve given problems.	The reviewer requires the cooperation of the organizational staff for filling in the OBAT.	20-30 minutes, depending upon RHIS skills of respondents	**The OBAT** could be used alone if only the culture of information or behavioral factors need to be assessed. OBAT can be combined with other tools to study their linkages with performance, processes, and other determinants.

5. Coding of Open-ended Questions Before Data Entry

Knowledge of rationale for RHIS data collection

Three questions (UIa, U1b, and U1c) were asked, as shown below along with their answers. There are three or more correct answers for each question. Thus, those giving all three correct answers to U1a and U1b get a raw score of three while not providing an answer at all gets a score of zero. Thus, the range of scores varies between zero and three. However, in the case of U1c, there is only one correct answer. To create an index score for how well the rationale for RHIS data collection is understtod, all the raw scores from all three questions are aggregated and converted into a percentile score. Do this by dividing the total raw score by seven and multiplying by 100.

Knowledge of rationale for data collection

U1. Describe at least three reasons for collecting data on a monthly basis for the following:

A. **Diseases**:
Possible reasons could be:

- knowledge of changes in magnitude of the selected diseases,
- taking action for providing medicine and other supplies, and
- planning preventive activities, etc.

Scoring: Each correct answer gets a raw score of one. Wrong answers (or no answers) get a score of zero. The overall raw score is obtained by adding all the scores. The range would vary between 0 and 3.

B. **Immunization**
Possible reasons could be:

- knowledge of various types of vaccine coverage,
- assessing gaps in immunization coverage,
- developing targets for immunization, and
- maintaining related supplies, etc.

Scoring: Each correct answer gets a raw score of one. Wrong answers (or no answers) get a score of zero. The overall raw score is obtained by adding all the scores. The range would vary between 0 and 3.

C. **Why is population data of the target area needed**?

The answer is:

- 1. To use as a denominator for calculating the various indicators

Scoring: The correct answer gets a raw score of one; an incorrect answer gets a zero.

Knowledge of Methods of Checking Data Quality

U2. Describe at least three ways of **checking data quality.** Some answers are:

- Observation of the service provider for correct diagnosis and documentation
- Comparison of monthly report with registers
- Comparison of generated data with other sources of data
- Data entry problems such as mistaken entries
- Internal consistency, e.g. comparison of number of patients and medicine use
- Historical comparison

Scoring: Each correct answer gets a raw score of 1. Incorrect answers receive a score of zero. The overall raw score is obtained by adding up the scores. The range will vary between 0 and 6.

To create an index score for knowing methods for checking data quality, all the raw scores from the correct answers are aggregated. A percentile score is created by dividing the aggregate by the total raw score of 6 and multiplying by 100.

Problem Solving Skill

To assess problem solving skills, a story with an opening and ending is used and respondents are supposed to fill in the middle part. The answer is broken down into defining the problem quantitatively and describing the activities for solving it. The scoring scheme is described below:

Problem solving

Dr. Akram, EDO Health, read a recent district report and found that data quality was only 40% and felt very disturbed by it. "I need to take action," he thought. He paced back and forth thinking about his next steps to improve data quality. After some time, he calmed down and wrote his action plan. Please describe how Dr. Akram defined the problem and what major activities Dr. Akram would have included in his action plan for improving data quality.

PSa. Definition of the problem

Scoring: The participant is supposed to assume a target of data quality to find the gap between the target and the actual level of data quality, because no data is provided on the target in the scenario. Second, the problem needs to be defined as a gap in performance. Thus, if these two criteria are met, the definition of the problem would be considered correct and would get a score of one. If incorrect, the score is zero. For example:

Data quality was found to be 40% and has a gap of 20% to reach a target of 60% in six months.

PSb. Major Activities

> **Scoring:** Each described activity gets a raw score of one. The overall percentile score is obtained by adding up the scores, dividing by the total items (10) and multiplied by 100. The range will vary between 0 and 100. A lower score shows less ability to solve problem, while a higher score shows the opposite.

The action plan should indicate specific steps to solve the problem as well as define monitoring and evaluating mechanisms. The activities should include:

1. Analyze causes for gaps in data quality
2. Collect data to provide evidence for those causes
3. Prepare selection criteria for causes
4. Select one or two cause(s) affecting most of the problem
5. Develop solutions to eliminate the cause(s)
6. Develop criteria for selecting the solution
7. Implement selected solution
8. Monitoring mechanism described
9. Evaluation plan included
10. Involve staff in problem solving process

HMIS Task Competence

Determining competence in HMIS tasks is comprised of assessing ability to calculate, plot data, explain data, and use data.

Calculation of percentage/rate

> **Scoring**: To obtain an overall score for competence in calculation, add up the answers for the following three questions. The raw score will range between zero and three. The percentile score is created by dividing the total raw score by the total number of items, three, and multiplying by 100.

1. The estimated number of pregnant mothers is 340. Antenatal clinics have registered 170 pregnant mothers. Calculate the percentage of pregnant mothers in the district attending antenatal clinics.

> **Scoring**: The correct answer, 50% of pregnant women attend antenatal clinics, receives a score of one. An incorrect answer receives zero.

2. A survey in a district found that 500 children under five years of age were malnourished. The total population of children under five years if age is 5000. What is the malnutrition rate?

Scoring: The correct answer, 10% malnutrition rate, gets a score of one. An incorrect answer receives a score of zero.

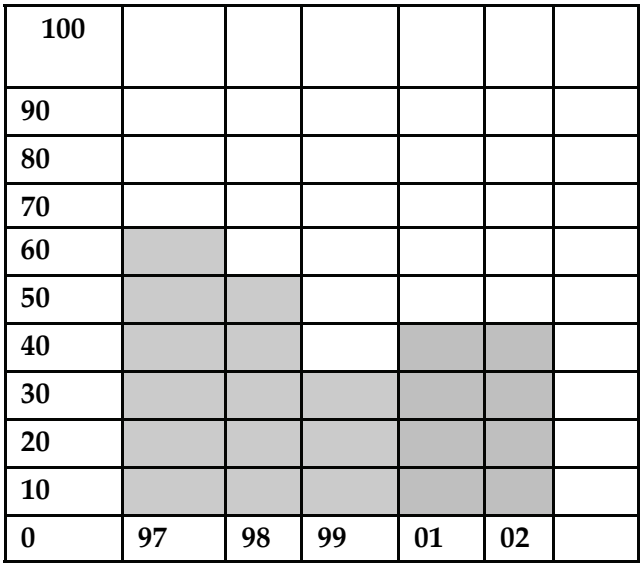
3. If the malnutrition rate in children under two years of age was 20% , and the total number of children under two years of age is 10,000, what is the number of children who are malnourished?

Scoring: The correct answer, 2000 malnourished children,receives a score of one. An incorrect answer receives a score of zero.

Plotting of data

The full immunization coverage for children, 12-23 months, was found to be 60%, 50%, 30%, 40%, 40% for years 1997, 1998, 1999, 2000 and 2001 respectively. Develop a bar chart for coverage percentages by year.

Scoring: The bar chart should like this and would get a score of one if presented correctly.



Explanation of data

Scoring: The raw scores of 2b and 2c are added, divided by the total items (7) and multiplied by 100 to get a percentile score.

2b. Explain the findings of the bar chart.

Scoring: Each correct response (see below) gets a score of one. Incorrect responses receive a score of zero. Thus, the total score will be between zero and six.

1. The immunization rate was highest in 1997.

2. The immunization rate was lowest in 1999.

3. Immunization rates were same for 2000 and 2001

4. It seems that there was a shortage of vaccine in 1999.

5. The immunization rate for 1997 and 1999 might be calculated incorrectly, because the rates for the other three years are much closer, with a margin of error of 10%. The error rate in a 30 cluster sampling is not statistically significant.

6. Given that there was no problem with data collection, the data showed that immunization rates were falling and then plateaued in the last two years

2c. Did you find a trend in the data? If yes or no, explain the reason for your answer.

Scoring: The correct answer is: Yes, the data showed a trend, given it is correct, as immunization coverage rates were decreasing till 1999, and then plateaued in the last two years after increasing from 30%. The correct answer gets a score of one; incorrect gets zero.

Use of data

Scoring: Each correct use at different levels (see below) gets a score of one; incorrect gets zero. Thus, the total score for use of data will range between zero and four. This is converted into a per-centile score by dividing it by the total number of items and multiplying by 100.

2d. Provide at least one use for these findings at:

2D1. Facility level – possible answers could be:

- assessing service coverage
- conducting disease surveillance

2D2. District level – possible answers could be:

- identifying low and high performance facilities
- advocacy

2D3. Policy Level – possible answers could be:

- New policy or revision of policy
- Advocacy for more resources

2D4. Community level –

- mobilizing the community to seek immunizations
- better information, education, and communication (IEC)

Chapter IX:

PRISM DEAT 1.0 Procedures

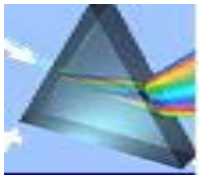
Chapter IX: PRISM DEAT 1.0 PROCEDURES

Section - Installation

You will receive four files:
PRISM_2.e00; PRISM_2.e01; PRISM_2.e02; and SPLICE32.tra
Put them in a folder.

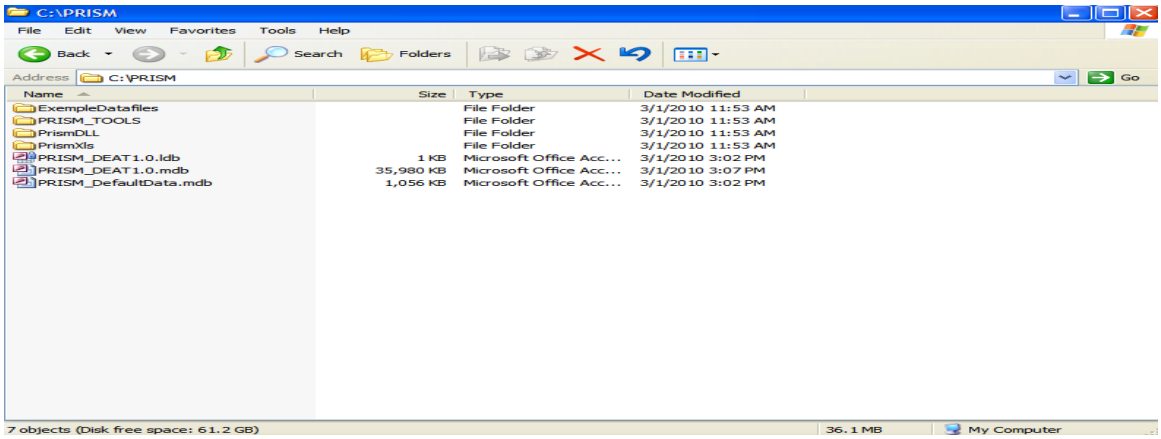
If you have all the files:
Step 1 - rename the file "SPLICE32.tra" by SPLICE32.EXE
Step 2 - run the file SPLICE32.EXE
Step 3 - the file PRISM_2.EXE is created in the folder
Step 4 - run the file PRISM.EXE to install PRISM on the C:\ drive

- A window will appear stating that the icon is produced on the desktop



PRISM DEAT 1.0

Check that PRISM folder in C:\ drive like the following - C:\PRISM



PRISM folder contains 4 subfolders:

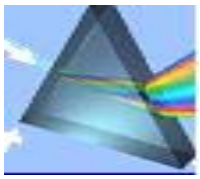
- ExampleDatafiles
- PrismXls
- PrismDLL
- PRISM_TOOLS

There are three Access files:

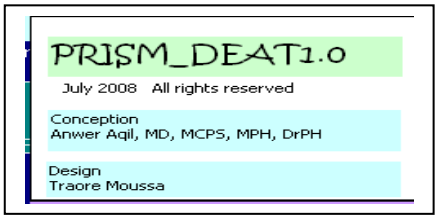
- PRISM_DefaultData.mdb
- PRISM_DEAT1.0.mdb
- PRISM_DEAT1.0.ldb

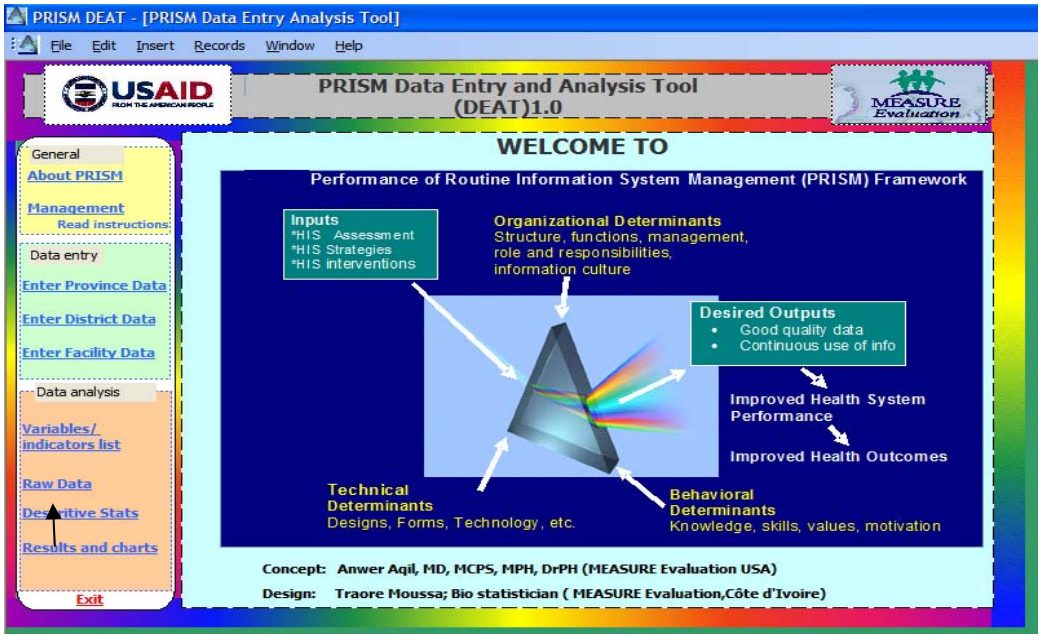
Section – Using PRISM DEAT 1.0

Whenever, you want to use, PRISM DEAT,
Double click on PRISM DEAT 1.0 Icon



1. This is first figure that appears when you open PRISM DEAT 1.0 followed by





Note the column on the right, which has four sections with different colors:

1. General
2. Data entry
3. Data analysis
4. Exit

These sections perform specific functions, as reflected in the name of each section. All of these sections have sub-sections. Now, we will provide information how to access these sub-sections and carry out data entry and analysis.

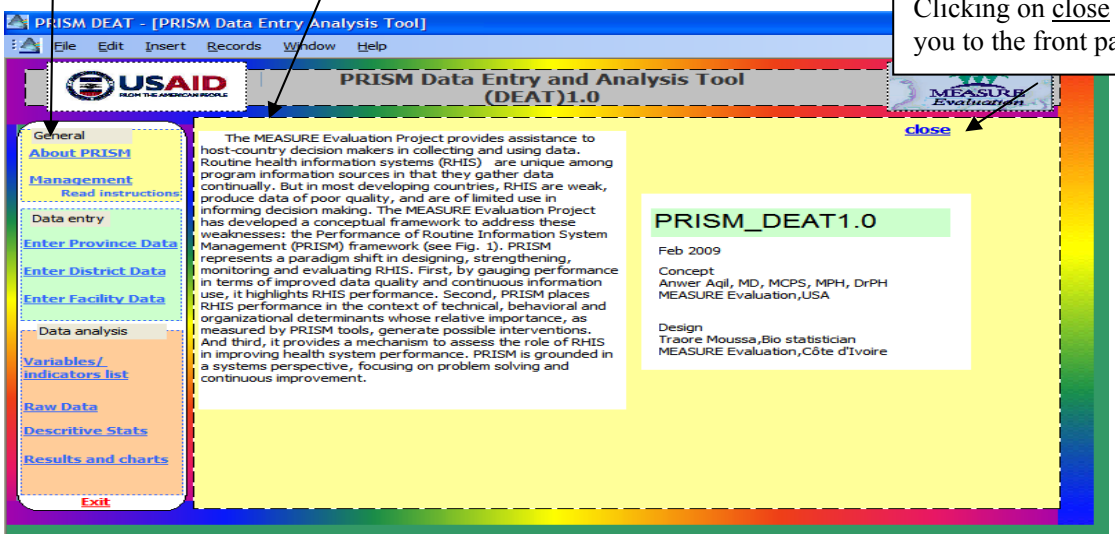
Section - General

This section has two sub-sections – About PRISM and Management. The details are provided below on these sub-sections.

1.1. ABOUT PRISM

Click on about PRISM, this will introduce PRISM framework, which is the conceptual basis for development of PRISM tools

Clicking on close will take you to the front page.

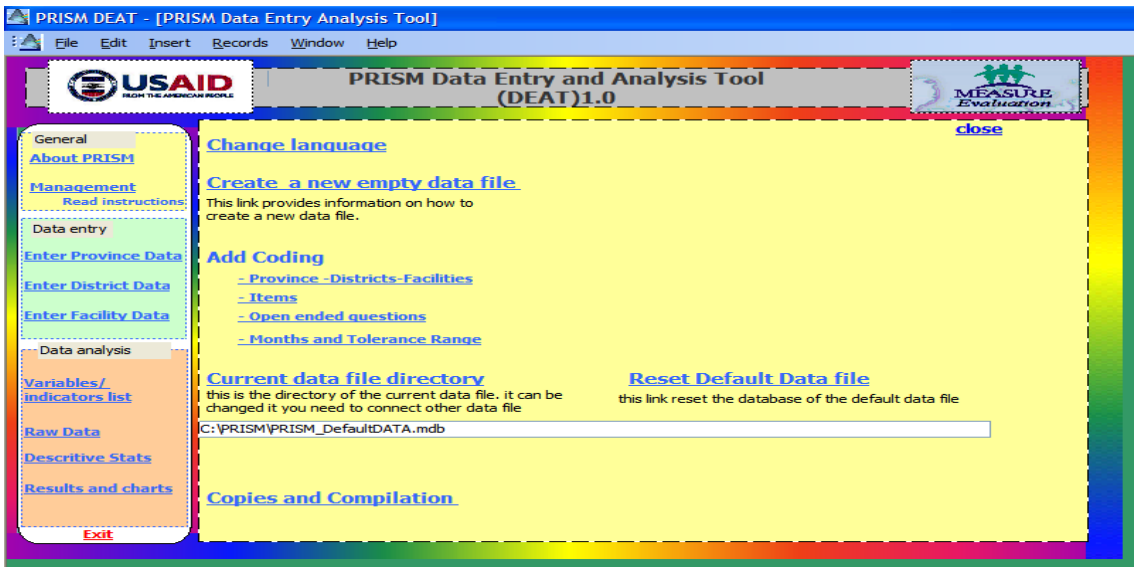


1.2 Management: Read instructions

This section is an **essential read**, as it provides information on how to manage data entry files, as well as how to changing the language and the PRISM tools indicator list.

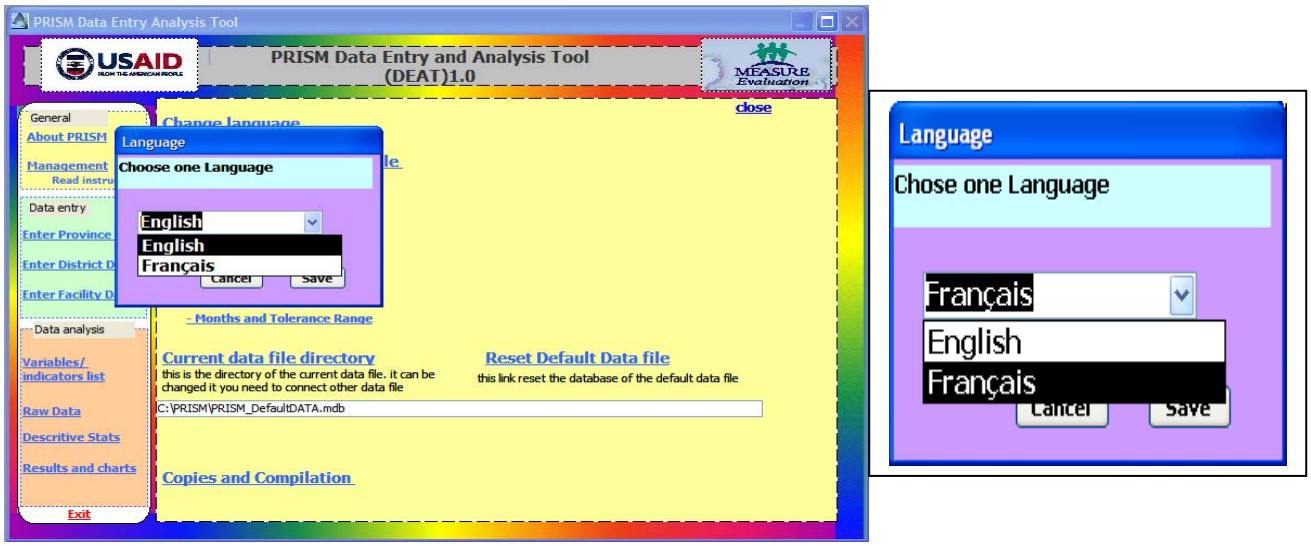
Click on the Management heading. The following window will appear showing:

1.2.1 Change Language
1.2.2 Create new empty data file
1.2.3 Add coding
1.2.4 Current data directory file
1.2.5 Reset default data file
1.2.6 Copies and compilation
1.2.7 Close



1.2.1 Change Language

⇒ Click on the change language, and the following window will appear.



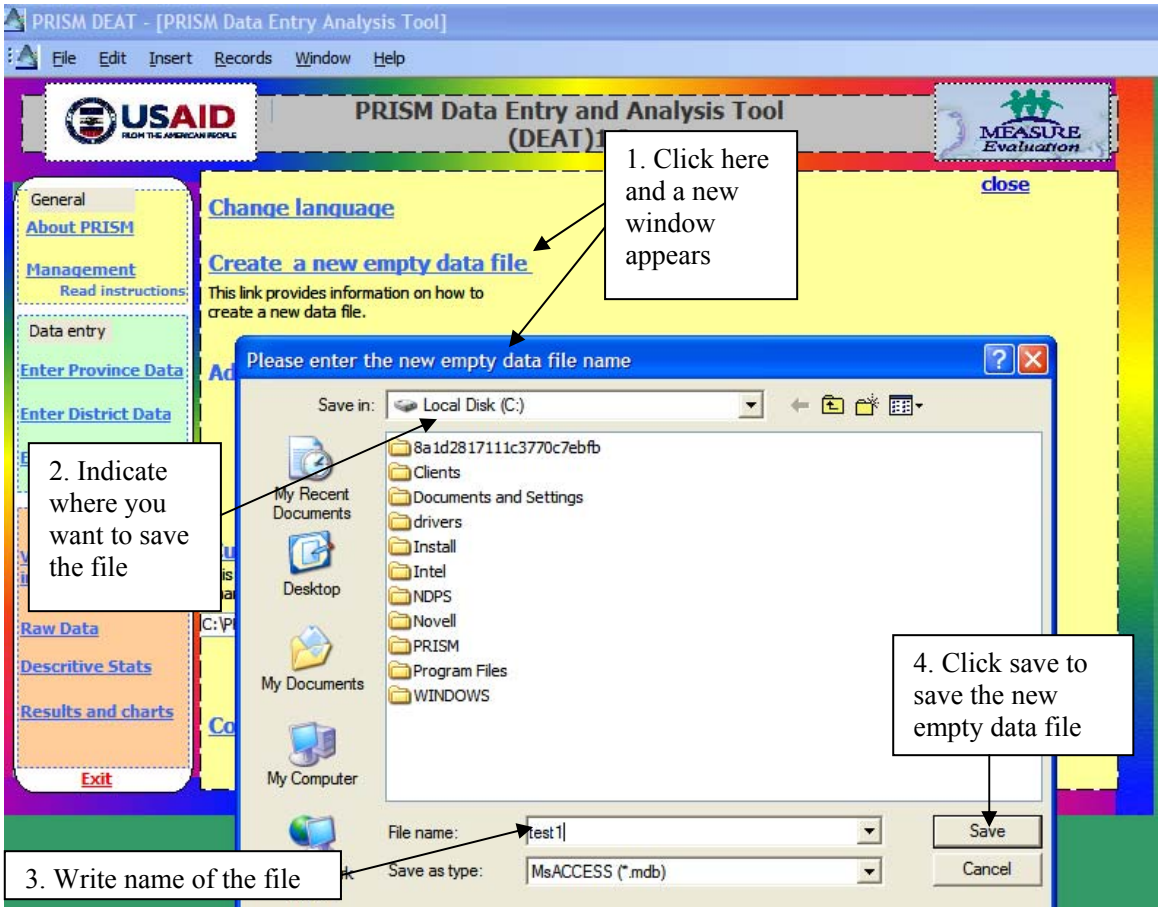
⇒ Select the language
⇒ Click on save to keep the language of your choice
⇒ Click on cancel if you want to keep the default language

Any selection of cancel or save will take you to the welcome page

1.2.2 Create new empty data file

This file is like any other access data file. The purpose is to store and analyze data using PRISM DEAT. You must create new data file for your data and save it wherever you want. Later, you can use this file to enter data.

⇒ Click on create new empty file. A new window appear (see picture below)
⇒ Give a name to the file under file name box
⇒ Under save in box, indicate where you want to save it
⇒ After naming the file and identifying where to save, click save



Whenever you are ready for data entry, you can open *your selected name file* for data entry using current data directory file

1.2.3 Add coding

This section is about creating coding, for identifying respondents at province, district and facility level, coding new items, coding open ended questions and creating performance limit which are covered, under the following four subsections:

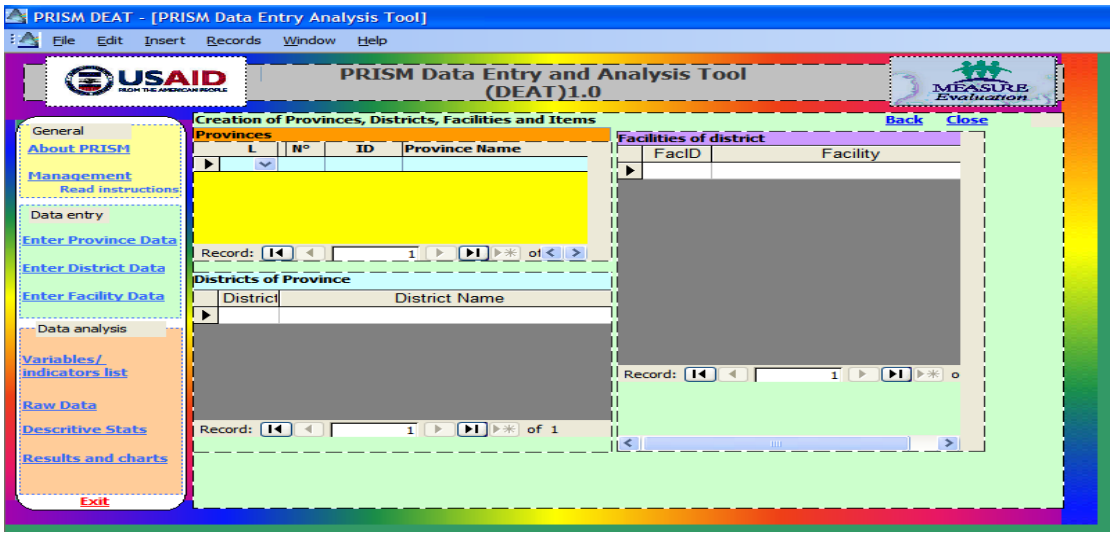
1.2.3.1 Province, districts, facilities

Each survey questionnaire needs a unique identifier or code for four reasons. First, it helps in identifying and locating the survey respondent, where the questionnaire was filled. Second, it assist to identify outliers in the data. Third, it verifies whether an outlier is caused by a data entry mistake and checking it by looking at the questionnaire. Fourth, it helps to group the data by geographical distributions.

The unique code for each questionnaire can be provided before or after the start of the survey. To avoid missing or making mistakes in coding during the survey, we decided that the coding of the questionnaire should be done after the survey. This section provides instructions for how to code the questionnaire.

Please note that this coding of questionnaire is different from coding the answers of the open-ended questions in OBAT, where answers are given number according to answer keys.

⇒ Click on the Province, districts, facilities, the following window will appear.



Province

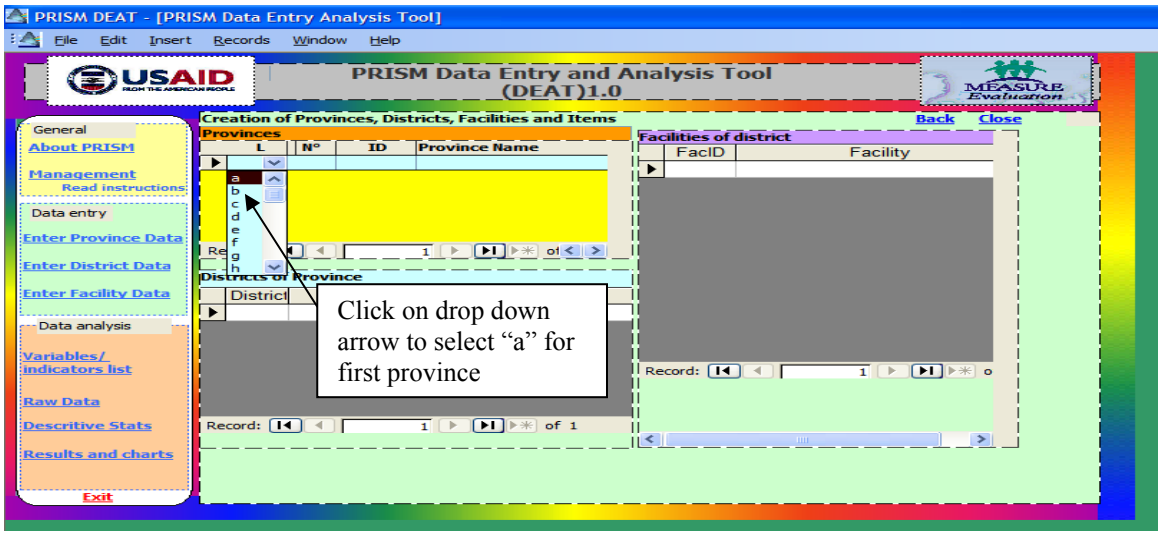
Province is the largest administrative unit in a country. It could be called state, region, division or any other name in other countries. Whatever name is used in a given country, use it synonymously with province when entering data. However, when writing report, use the given name.

⇒ Notice four columns, starting from the left side, first is L (English alphabet), second is N (number), third is ID (identification number created by L and N column), lastly province name

⇒ Provinces are given identification number starting with English alphabet letter a to z, meaning a country could have 26 provinces. These are located in column L, with a drop down option. If there are more provinces then it is better to use another data file.

⇒ To start coding province, make sure that the cursor (▶) is on the first row

⇒ Under L column, click on the drop down arrow to open the choices of the alphabet, like in the picture below



⇒ Select a, which automatically create 1 under N column and a code number under ID column
⇒ Write the name of the province in province name column
⇒ Go to next row and repeat the process for second province
⇒ Repeat the process till all provinces are entered

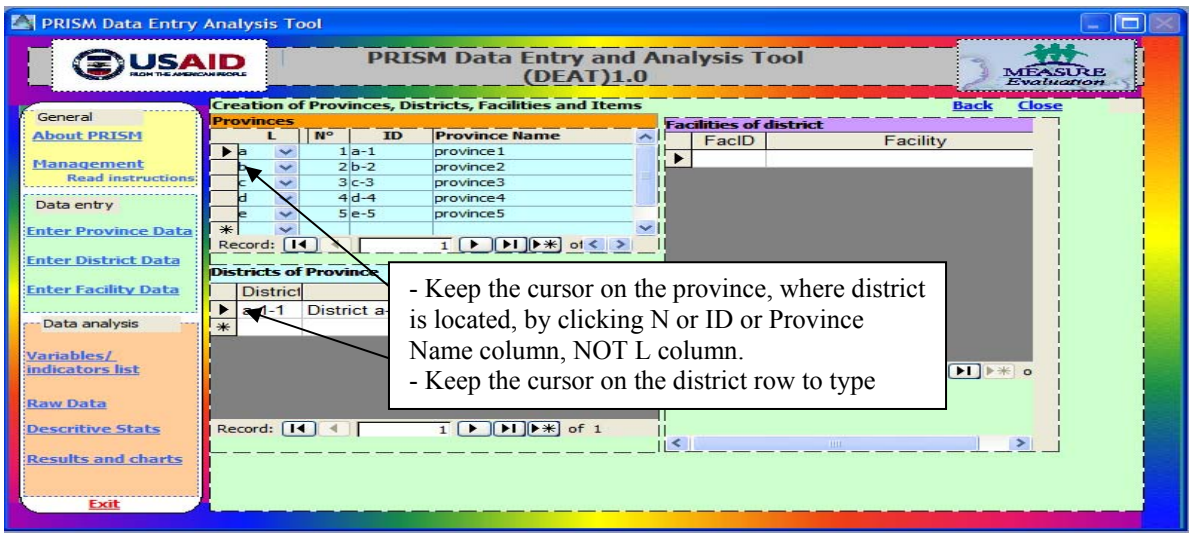
Now you are ready to create coding for the districts in a given province. Make sure the same coding number is used on the questionnaire so that you could identify the questionnaire later.

District

Please note that the districts are nested in the province or higher administrative units.

⇒ District window has three columns – a cursor column, district column and district name. Only column to fill is district name column, while under district column the district ID code appears automatically
⇒ Cursor **(►)** indicate the row, which is being used
⇒ Make sure to keep the cursor **(►)** on the province, whose district(s) needs to be coded (Click on N or ID or Province Name column, NOT L column, of province, to keep the cursor on the province you want to select. When you click L column, the cursor is NOT actually on the province, although it looks so.)
⇒ Do not write in the district column

⇒ Go directly to column district name. Add the name of the district
⇒ After filling the name of the district and clicking enter, notice that a code appears under the district column for that district (the first district code should start with a-1-1), and a new row appears below with an active cursor (►)

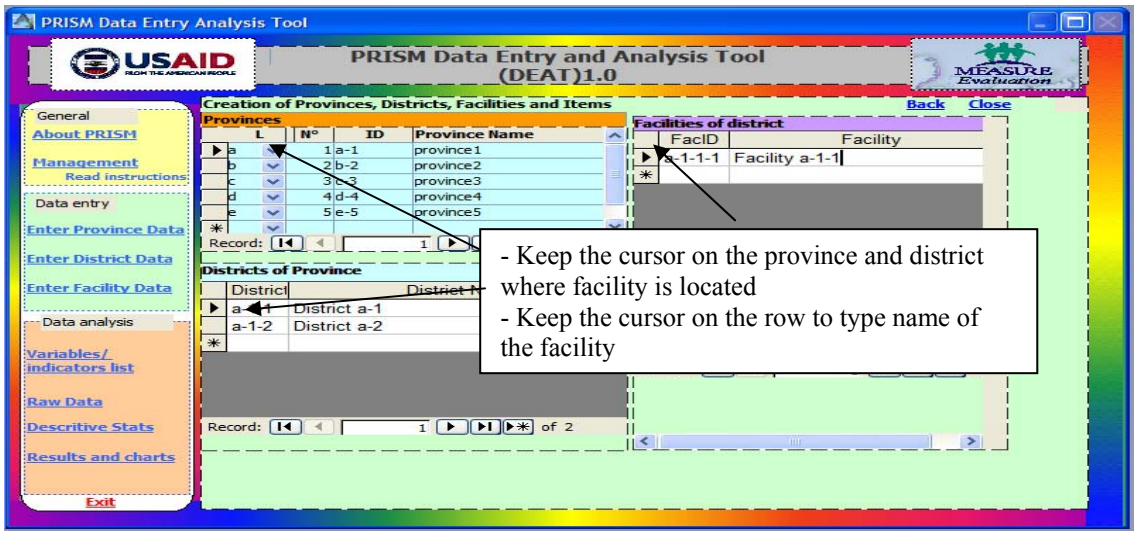


⇒ Add name of the second district of the same province (keep the cursor on same province)
⇒ Repeat the process till all district names are added for a particular province
⇒ Start entering district names of the second province. MAKE SURE, UNDER PROVINCE THE CURSOR IS ON ROW OF SECOND PROVINCE.
(Click on N or ID or Province Name column of the second province, NOT L column.)
⇒ Repeat the process till all district names are added for the second province
⇒ Note that second district code starts with b-2-1
⇒ Repeat the process till all district names are added for third and subsequent provinces

Do not forget to put the same ID coding on the questionnaire for later identification. It is time to create ID code for the facilities.

Facilities

Please note that the facilities are nested in the district(s)/province(s) or higher administrative units.



⇒ Facilities window has three columns – a cursor column, Facility ID column and Facility name. Only column to fill is facility name column, while under Facility ID column the Facilities ID code appears automatically

⇒ Cursor **(►)** indicates row that is being used

⇒ Make sure to keep the cursor **(►)** on the province and district, whose Facilities need to be coded. (Click on District or District Name column, NOT the cursor column, of the district, to put the cursor on the district.)

⇒ Do not write in the Facility ID column

⇒ Go directly to column Facility name. Add the name of the Facilities

⇒ After filling the name of the Facility and clicking enter, notice that a code appears under the Facility ID column for that Facility district (the first facility code should start with a-1-1-1), and a new row appears below with an active cursor

⇒ Add name of the second Facility

⇒ Repeat the process till all Facilities names are added for a particular district of a province

⇒ Start entering Facilities name of the second district of the same province. MAKE SURE, UNDER PROVINCE THE CURSOR IS ON THE SAME PROVINCE. *HOWEVER UNDER DISTRICT BOX, CURSOR IS ON THE SECOND DISTRICT*

⇒ Repeat the process for entering facilities name for the second province and its associated districts

⇒ Note that Facilities code starts with b-2-1-1 for second province

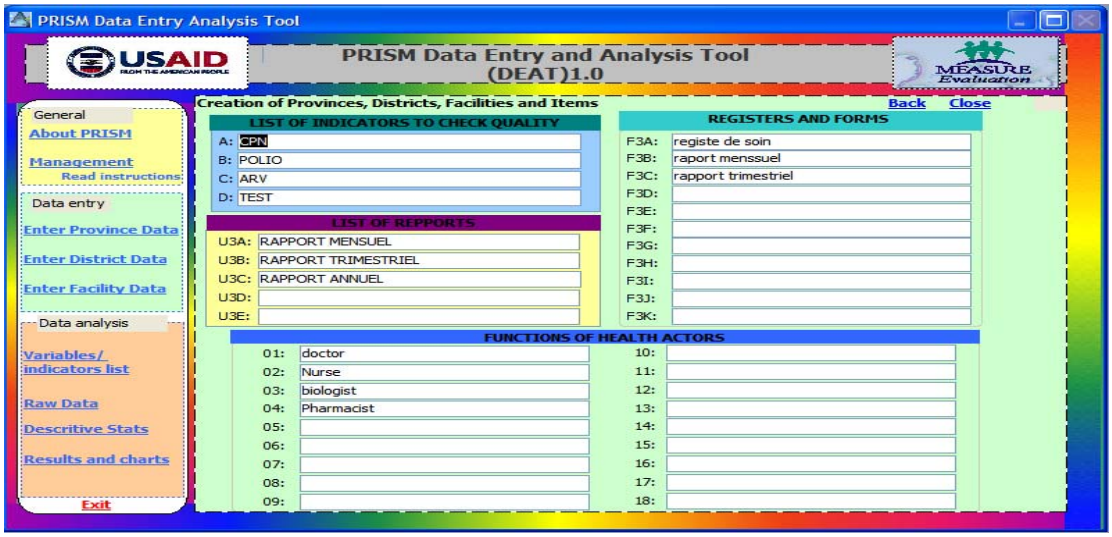
⇒ Repeat the process till all Facilities names are added for the third province and subsequent facilities related to a particular district and province

Please note these ID code for the province, district and facilities should be put on each questionnaire to identify them. The best way to code these questionnaires is to keep them under highest level of aggregation which in our case could be province or higher level administrative unit. However, if the data is collected from one province but from different districts then district could be the highest level of aggregation of the questionnaires. Thus, all questionnaires belonging to a particular district should be put in a pile of that district. However, if there are more than one questionnaire collected from each facility then all of those questionnaires belonging to one facility should be put together. This process will facilitate creating code for each questionnaire according to its province, district and facility.

1.2.3.2 Items

As you recall, there are many questions that are open-ended and some needs to be adapted in line with a particular country. For example, which data elements to choose for checking data accuracy, which reports are produced on regular intervals, what are different categories of the health personnel at the facility, what forms to include to check their availability? Thus, these decisions need to be made before the survey and reflected in survey instruments. These changes need to be incorporated in the data entry forms. This section provides that opportunity. By adding name of the data elements, the results charts show the same name variable after analysis.

⇒ Click on items, the following window appears



First Table- Under list of Indicators to check Quality, add selected data elements for checking data accuracy as listed in FQ4A, FQ4B, FQ4C and FQ4D in facility section under data quality section of the diagnostic tool. The same is true for district DQ10a,b,c.

Second Table, under list of reports add name of the reports (DU3a,b,c,d,e) for district level, and for facility level under FU3a-e. These questions are part of section of use of information of the diagnostic tool for both district or higher level and facility level.

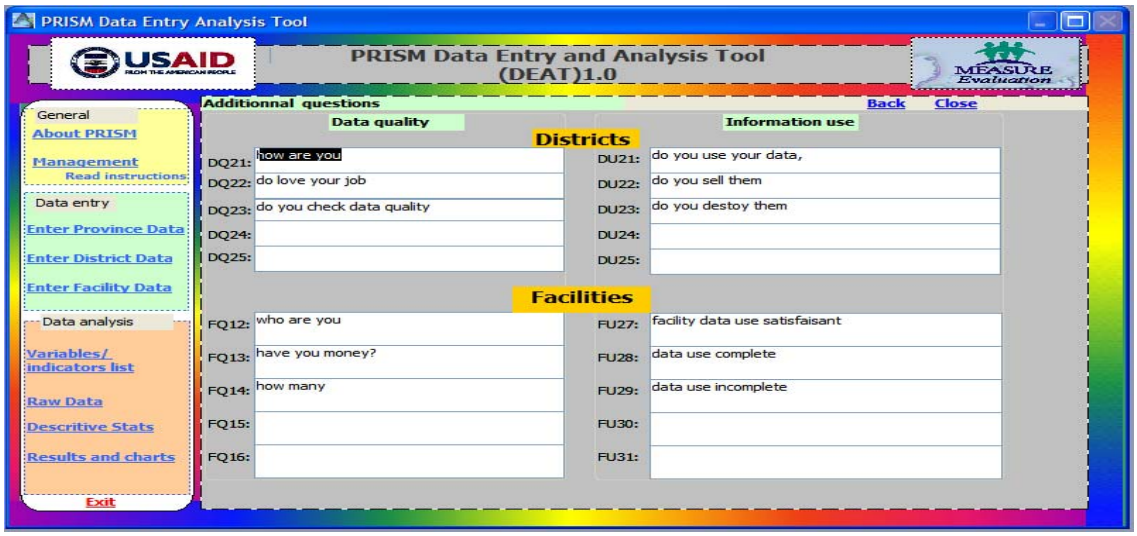
Third Table, under registers and forms, add name of the selected register/forms. This section is part of the facility checklist tool

Fourth Table, under Functions of Health Actors, add categories of staff according to the country situation. This section is part of the facility checklist tool.

1.2.3.3 Open ended questions

⇒ Click on open ended questions, a new window appears

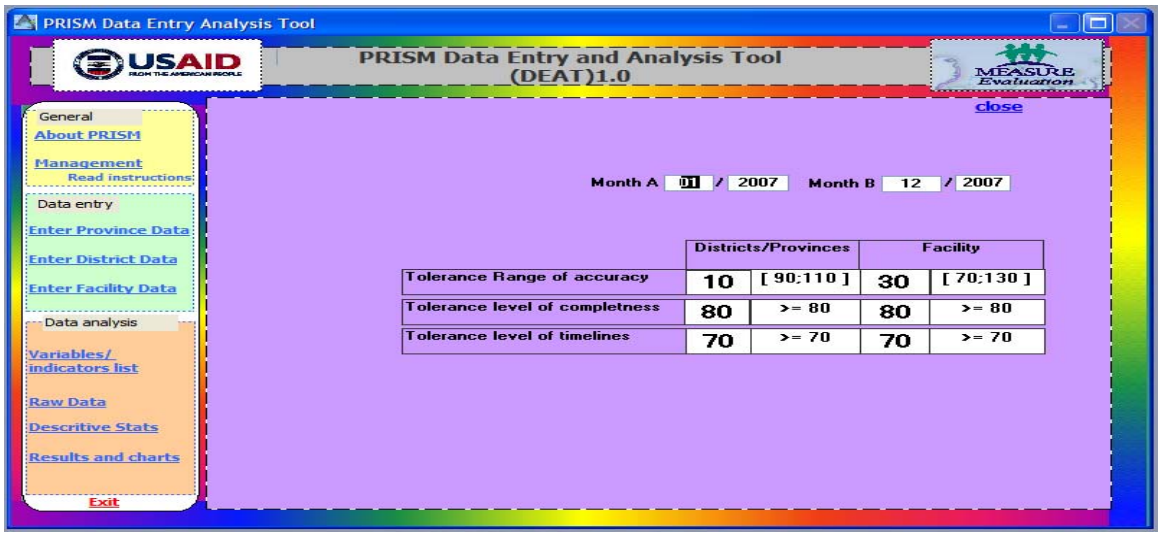
As you recall, there are empty spaces left in the diagnostic tools for addition of questions that assess unique situation in a given country. If new questions are added, then following spaces allow you to add new questions under data quality and information use both at district and facility level. Add these new questions here.



1.2.3.4 Months and tolerance range for data quality

Data quality is checked by accuracy, completeness and timeliness. However, it is not possible to have 100% accuracy, completeness and timeliness due to systemic and random and human errors. Therefore, we allow some tolerance in accuracy, completeness and timeliness. How much tolerance should be allowed depend upon the specific country standards. Thus, we have created a window to allow entering level of tolerance, which is then used for analysis related to level of data accuracy, completeness and timeliness. One can specify same or different tolerance levels for different selected months.

⇒ Click on Months and tolerance range, a new window appears



⇒ Under Months, enter selected months

⇒ Under tolerance for accuracy, enter the level you want. Note that the range changes with your specified level, giving lower and upper limit.

⇒ Under tolerance for completeness, enter the level you want. Note that the range changes with your specified level, however the direction is only equal or higher. The rationale for equal or higher is that all or 100% facilities are supposed to submit report and we could only allow a certain leeway say 10 or 20 percent facilities not reporting. Thus, there is no question of allowing a lower limit or in other words that is the lower limit. Similarly the completeness of monthly or quarterly report means the

facilities are support to fill all or 100% data elements but a leeway of 10 or 20 could be allowed.

⇒ Under tolerance for timeliness, enter the level you want. Note that the range changes with your specified level, however the direction is only equal or higher. The rationale is same as for completeness.

Please note that change in range depend on level of tolerance specified. If the data tolerance level for data accuracy is specified 10% that means the data accuracy level is 100% with lower limit of 90 and upper limit of 110. However, if the tolerance level is 20, it means the actual accuracy level is still 100%, but the lower and upper limits are 80 and 100 respectively. Note that the range changes with your specified level, giving lower and upper limit.

However, please note that this is a priori setting of tolerance level. It does not tell us what is the actual percentage of facilities reporting that level of data accuracy? The analysis will use this tolerance level to show how many facilities lie with in this range of data accuracy. **The calculated percentage will inform** how many facilities lie with in 100% data accuracy with tolerance range of 90 or 110 if tolerance level is set at 10 or 80 to 120 if the tolerance level is set at 20.

Similarly, the completeness and timeliness percentage is calculated using tolerance range. The interpretation for completeness for monthly report would be calculated % of facilities filled the required standard (set limit) of 80% or more or 90 or more filled data elements. The completeness for facilities reporting at district would be interpreted as the district meet or not meet the completeness standard of 80% or more.

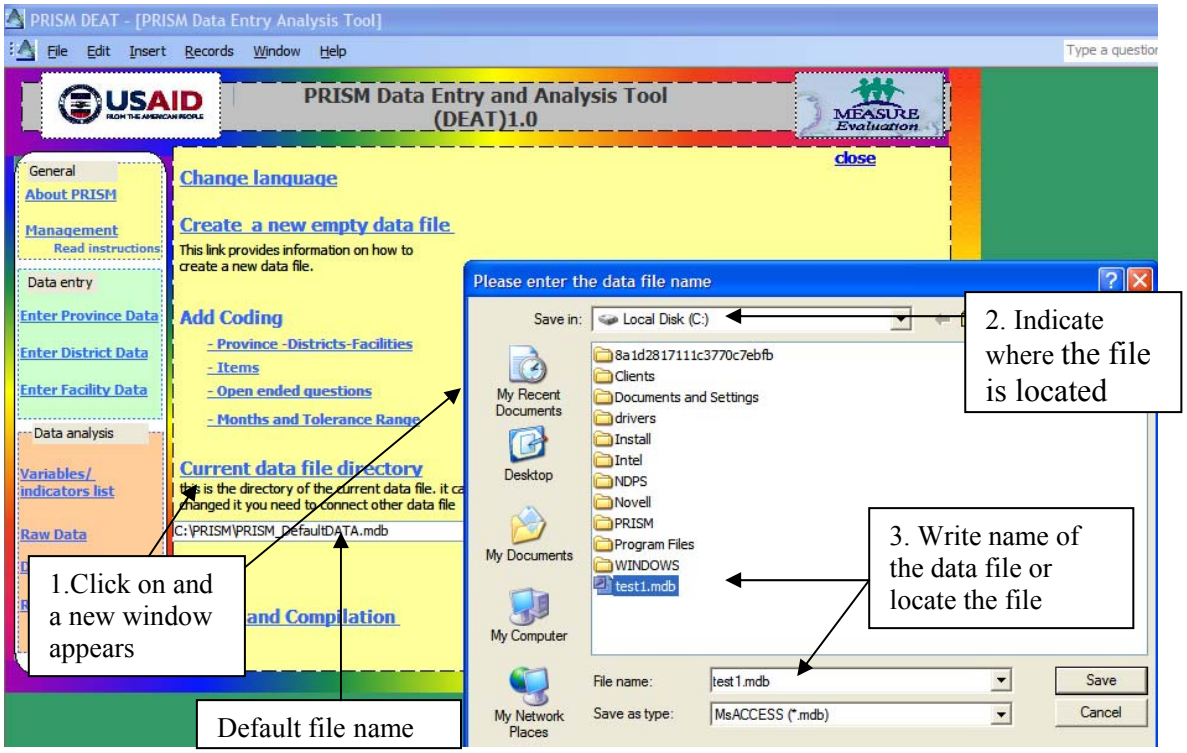
The calculated timeliness at district will show % of facilities submitting report on time meeting or not set standard of timeliness.

1.2.4 Current data directory file

Note under current data directory file, it shows C:\PRISM\PRISM_DefaultDATA.mdb. This is a default data file that has fictitious data in it. The file is kept for you to review how the PRISM DEAT works and how analyses are built.

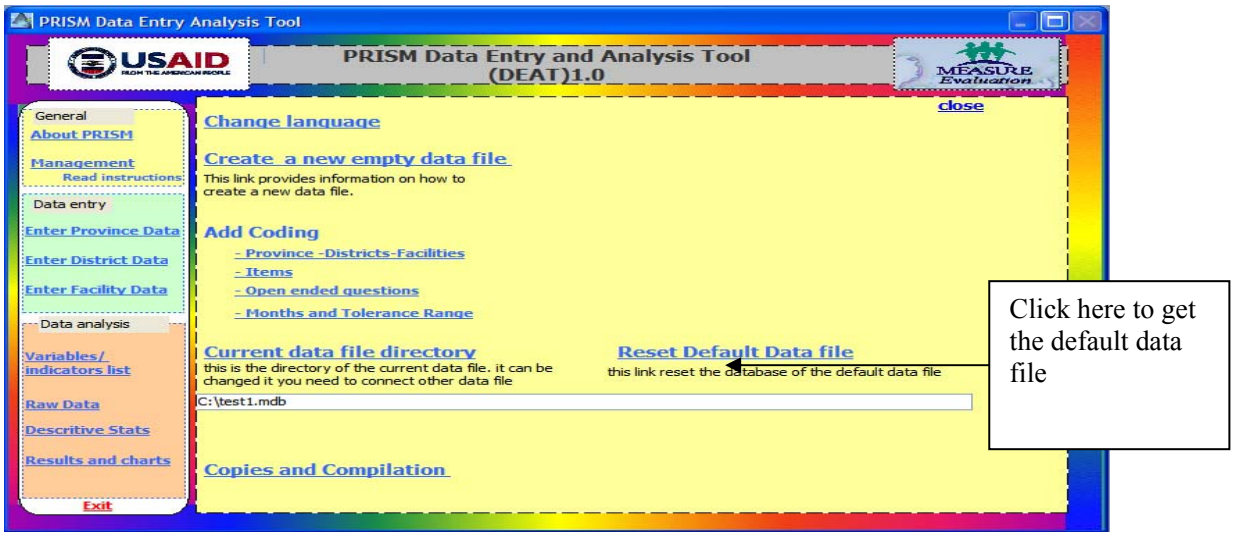
However, you can change the default file with your own file. The steps are as follows:

⇒ Click on current data directory file. A new window will open (see picture below), asking you to enter the data file name
⇒ Under save in box, indicate where your file is located
⇒ Write name of the file under file name box or double click after locating the file
⇒ This will make your selected file as the same current data file, which you can access for data entry and analysis.



1.2.5 Reset Default Data File

Whenever, you want to shift to the default data file, click on Reset Default Data File. This will make the C:\PRISM\PRISM_DefaultDATA.mdb a current file.



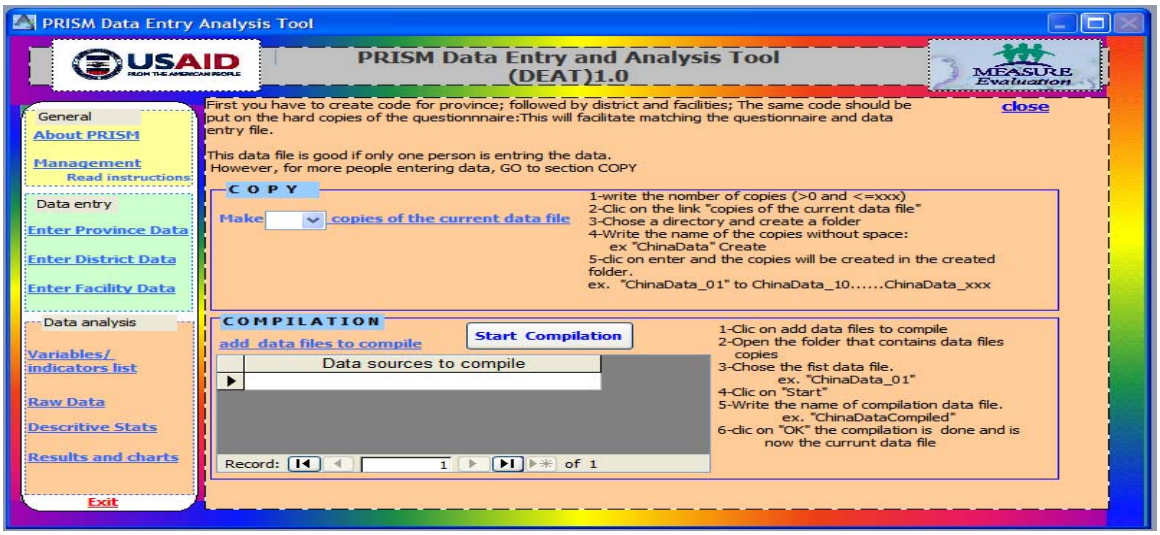
1.2.6 Copies and Compilation

So far, we have talked about making one data file for data entry and analysis. We know that in practice, usually more than one person enter the data, especially if the data set is large or time is short. *To facilitate data entry by multiple persons*, we have created this section to make copies of the master data file, enter data, and compile all files into one data file to start analysis.

NOTE:

1. **DO NOT USE THIS SECTION UNLESS THE CODING OF THE QUESTIONNAIRE IS COMPLETED IN MASTER FILE**
2. **FIRST, GO TO SECTION CODING TO PREPARE THE MASTER DATA FILE**
3. **COPIES SHOULD BE MADE AFTER THE MASTER DATA FILE IS PREPARED.**

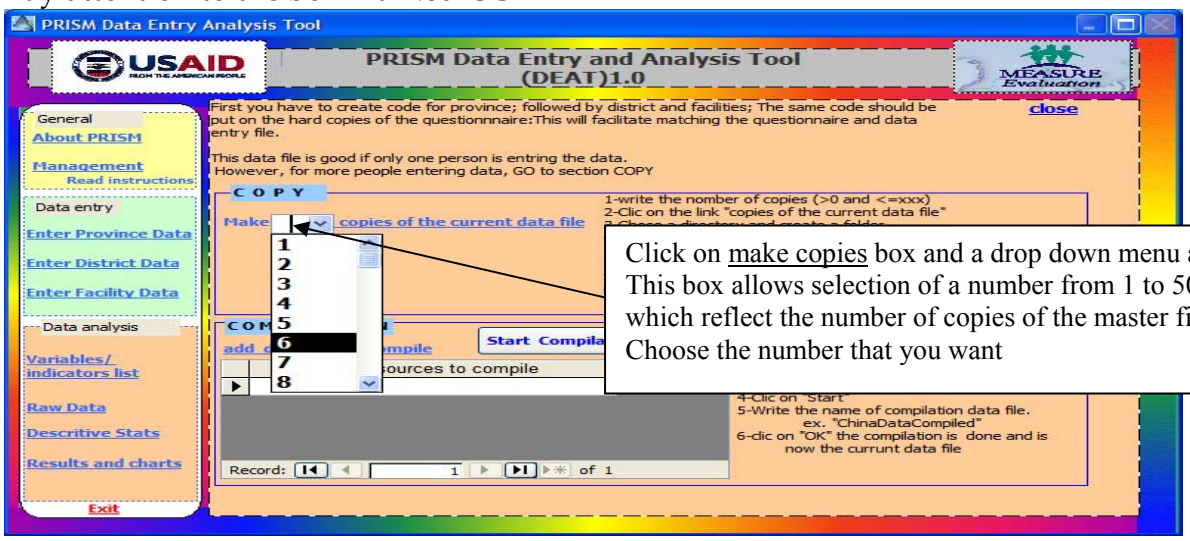
After clicking on Copies and compilation, the following window appears:



1.2.6.1 COPY section

This section allows you to make multiple copies of the master data entry file. These copies can then be distributed among the data entry person for data entry.

How to use this section.
Pay attention to the box marked **COPY**

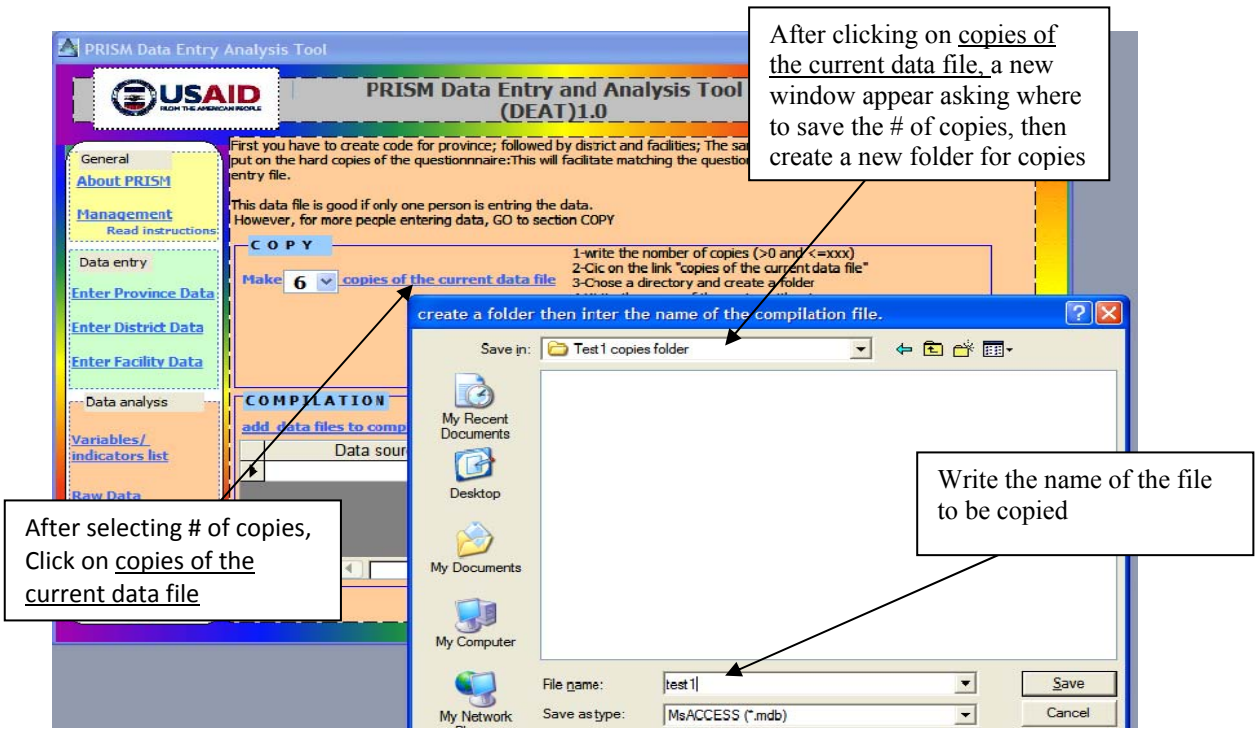


⇒ First click on the make copies, which allow to select the number of copies you want

⇒ Once you select the number of copies, click on copies of the current data file. A new window appears

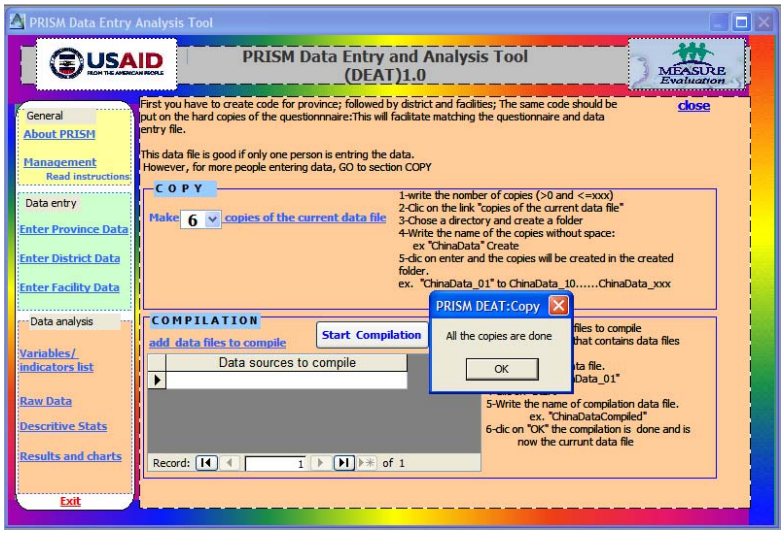
⇒ Choose a directory and create a new folder, and write the name of the file for which copies are made

⇒ Click on enter and this automatically makes the number of copies and save in the folder you made earlier in specific directory



⇒ After the copies are made then a new window appears, declaring that all copies are made

⇒ Click OK to complete the process



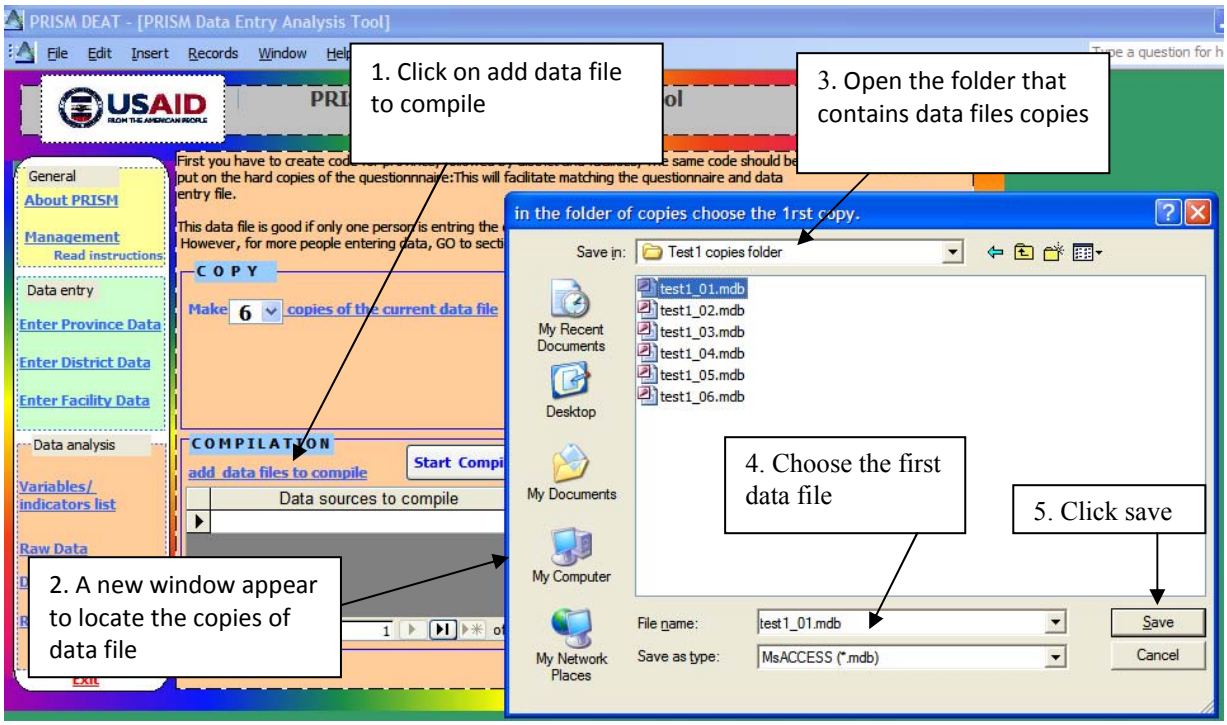
⇒ Go to the folder and check that all selected numbers of files are available with names
⇒ You can copy these files and distribute them among the data entry persons.

1.2.6.2 Compilation

Pay attention to the *Compilation box* only.

Once the data has been entered by *different entry persons* in different files, those files need to be brought back together into a new folder and saved. This will allow a one time and fast compilation of all data files into one data file for analysis.

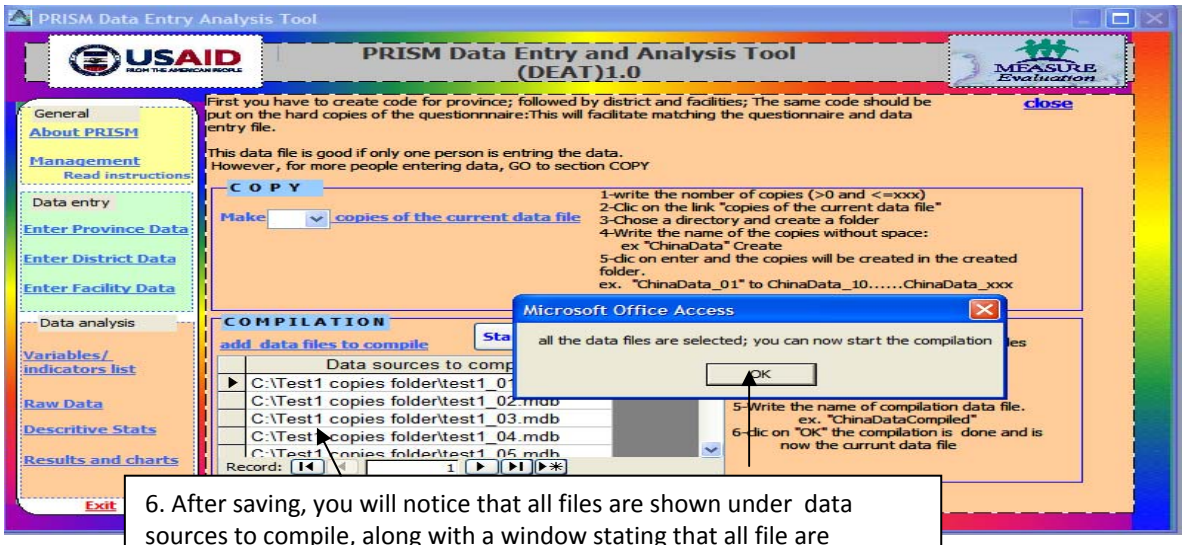
⇒ Click on add data file to compile, a new window will appear to identify folder where the files are located.
⇒ Open the folder that contains data files copies, and choose the first data file
⇒ Click on save.



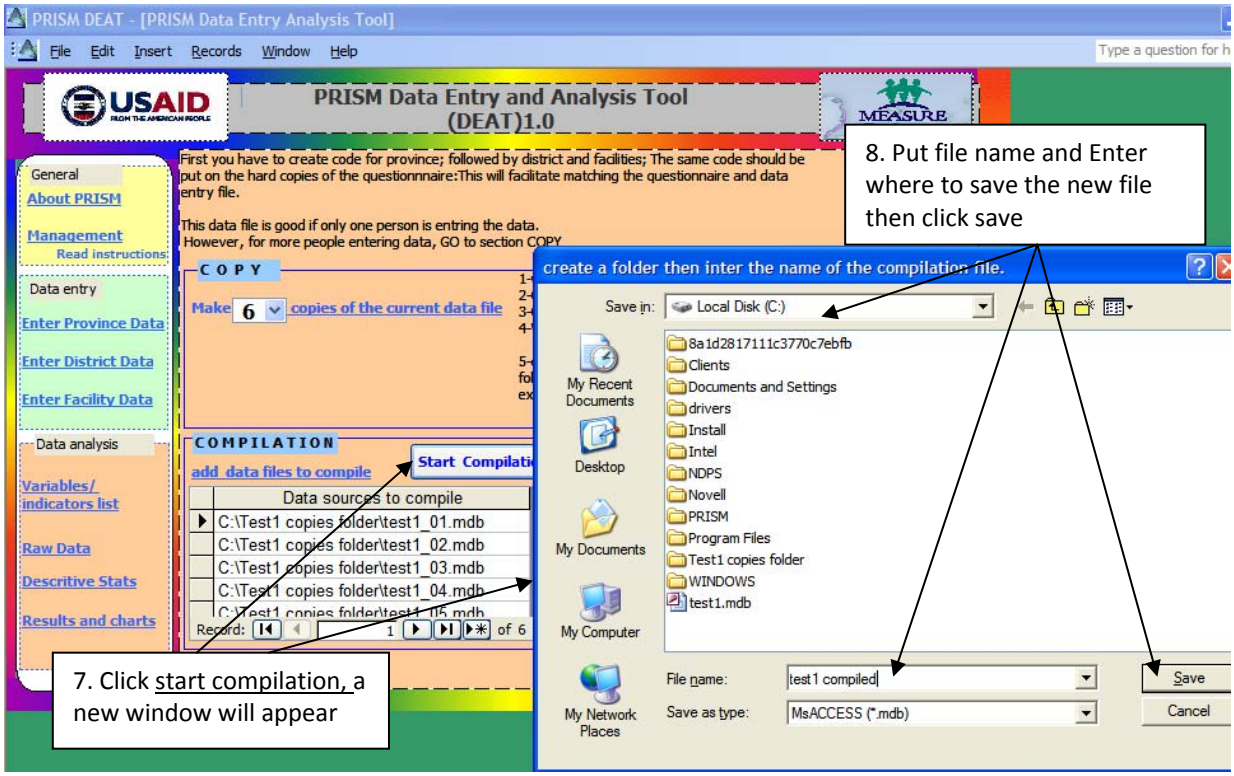
⇒ Notice that all files showed up under the box of <u>data sources to compile.</u>

⇒ A new window will open up saying that all files are available for starting the compilation. Click OK to remove the window

⇒ Now you are ready for the compilation of all selected files



⇒ Click on start compilation
⇒ A new window will appear, asking you to name the file and where to save it



⇒ After entering the name of the file and where to save it, click save
⇒ Within seconds, a new window will appear, indicating that compilation is completed
⇒ Click OK to move forward. Click close to go the PRISM page
⇒ Check in the folder whether your compiled file is available or not

Now, you are ready to conduct analysis. However, as we have noted earlier, **do not makes copies of the master file before all coding of questionnaire is complete.** Thus, we start with coding section now.

Section - Data Entry

Once coding of the questionnaire is complete, you are ready to start data entry. However, before data entry, decide whether one or more person would do the data entry. If the decision is to have more than one person for data entry then go to the section Management for making copies of the data entry template. We hope you remember section **1.2.6.1, Copy section, under Copies and Compilation. Follow the instructions**

Make copies of master data file and distribute them among the data entry persons.

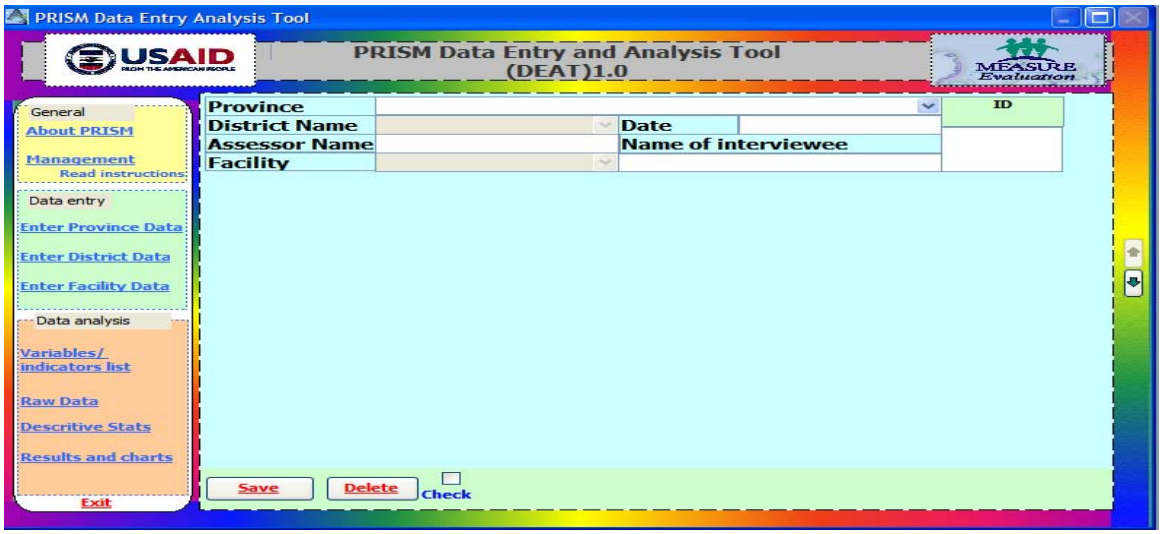
Now you are ready to start data entry.

Data entry section has three subsections for data entry from different levels. These include:

- Provinces
- Districts
- Facilities

⇒ Click on the province, a new window appears

It has identification information such as name of the province, district name, date, assessor name, name of the interviewee, facility name and lastly ID. However, note that district name and facility fields are not accessible because this data entry is only for the provincial level, thus district and facility information are not needed.



⇒ Click on the arrow of the province, which provide a list of provincial names. This list was generated from the earlier coding of the questionnaire.

⇒ Select the province for which you want to enter the data

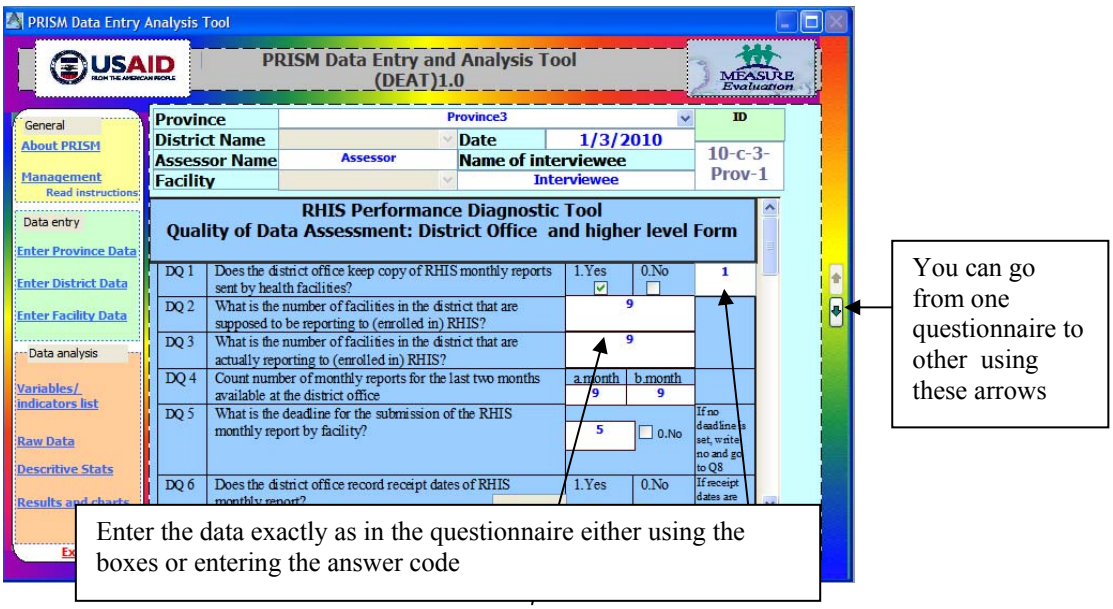
⇒ Enter the name of the assessor, as described in the questionnaire

⇒ Enter the date of the assessment, as described in the questionnaire. You will notice that it automatically brings the ID code of the province

⇒ Enter the name of the interviewee, as described in the questionnaire

⇒ This will bring the data entry template, which is the replica of the questionnaires

⇒ Enter the data exactly as in the questionnaire either using the boxes or entering the answer code. It is faster to type the answer code than to click answer codes. Please note *Typing code is the default option of data entry.*

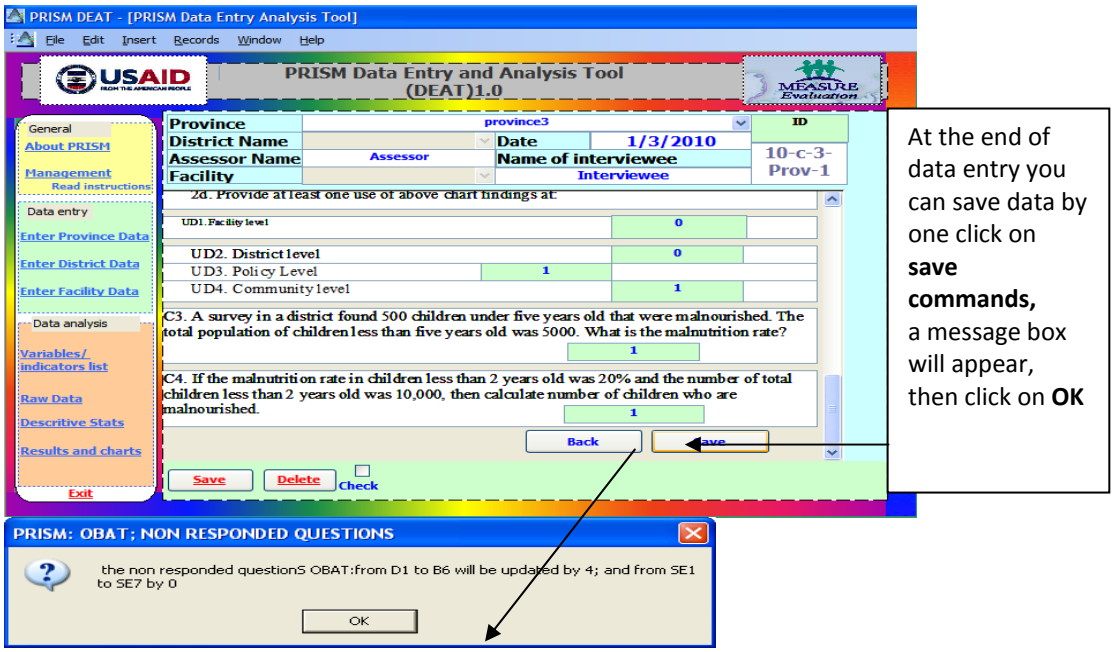


⇒ Once the page is filled, *click <u>next</u>* and a new page appears

⇒ You can also use the arrow on right colour column to go from one questionnaire to the other. This is especially good when you want to check or edit the data entry

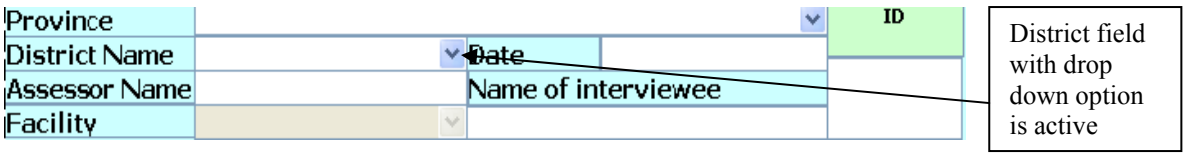
⇒ You can use <u>delete</u> box to delete wrong data entry

⇒ Once you finish entering the data, you can save the data by *clicking <u>save</u>*



Data entry for district forms

Please note that data entry for district form starts with a click on district under data entry section. The same identification code as for the province appears as follows,



The difference is that now district field is active with drop down arrow.

⇒ Use drop down arrow to select the district for which data need to be entered.

⇒ After entering date of assessment, the ID number appears automatically. This need to be put on the hard copy of the questionnaire as well for future reference.

⇒ Once you complete entering the identification, data entry template appears

⇒ The rest of data entry is the same as for the province

Data entry for facility forms

Please note that data entry for the facility form starts with a click on facility under data entry section. The same identification code as for the district/province appears as follows,

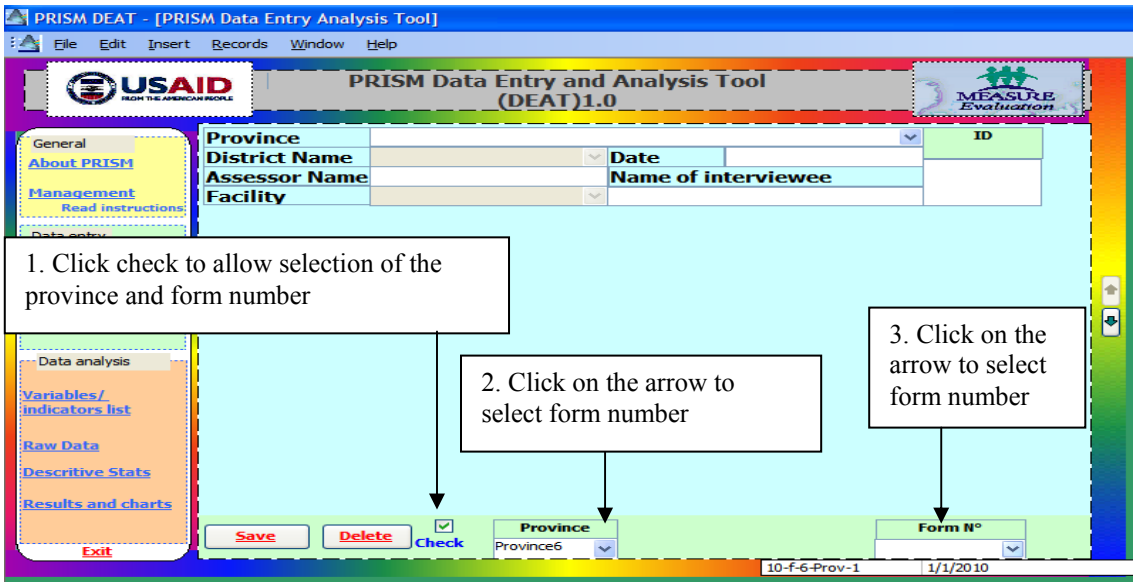
The difference is that now facility field is active with drop down arrow.

⇒ Use drop down arrow to select the facility for which data need to be entered.
⇒ After entering date of assessment, the ID number appears automatically. This need to be put on the hard copy of the questionnaire as well for future reference.
⇒ Once you complete entering the identification information, data entry template appears
⇒ The rest of data entry is same as for the district/province

Checking the Provincial Forms

To check and edit the entered data, a check box is provided. It facilitates locating the province, district or facility forms.

- Click Province first under data entry section to locate the needed form at the provincial level
- Click the *check box*
  - ⇒ This will display the province name and form number window appears
  - ⇒ You can selected a different province by using drop down arrow option
  - ⇒ Use the drop down arrow, which allows selection of the form number for data entry

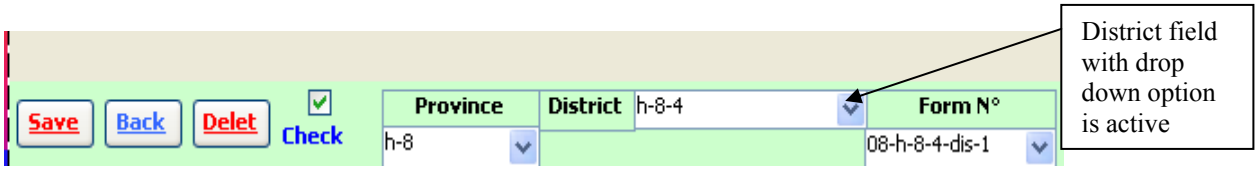


- ⇒ After the selection of the form number, data entry form of the selected province and person appears
- ⇒ It is ready for review and editing
- ⇒ Use delete box to delete the displayed data of the selected entry form

Checking districts and facilities forms

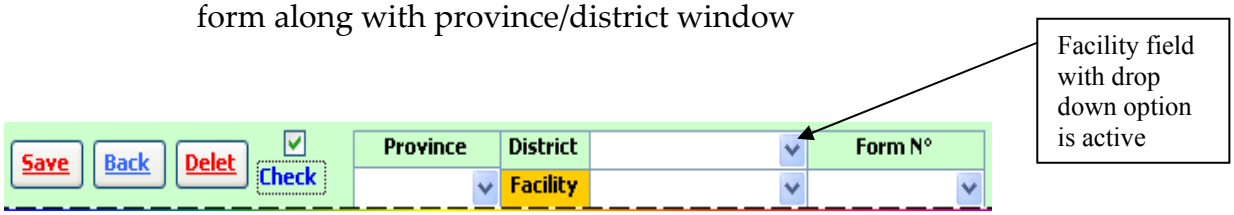
- ⇒ The same process is applied to check and edit the district and facility forms with following changes –
  - Click District first under data entry section to locate the needed form at the districtlevel

- *For district form*, the district window will appear to select the district name along with province window



⇒ Use *delete box* to delete the displayed data of the selected entry form

- Click facility first under data entry section to locate the needed form at the facility level
- *For facility form*, the facility window will appear to select the facility form along with province/district window



⇒ Use *delete box* to delete the displayed data of the selected entry form

Data Cleaning

Before conducting data analysis, it is always good to verify the data entered to identify the data entry mistakes. One way to reduce time in data cleaning is to create restriction in making mistakes while entering data. Thus, many restrictions are in-built to avoid data entry mistakes, especially where answers codes are known. However, it was not possible to create restriction for free floating number such as how many facilities reporting to districts, number of particular data elements being checked, etc.

However, outliers can be traced by having frequency checks and noting values that are not in line with most data values. This part is included in descriptive analysis.

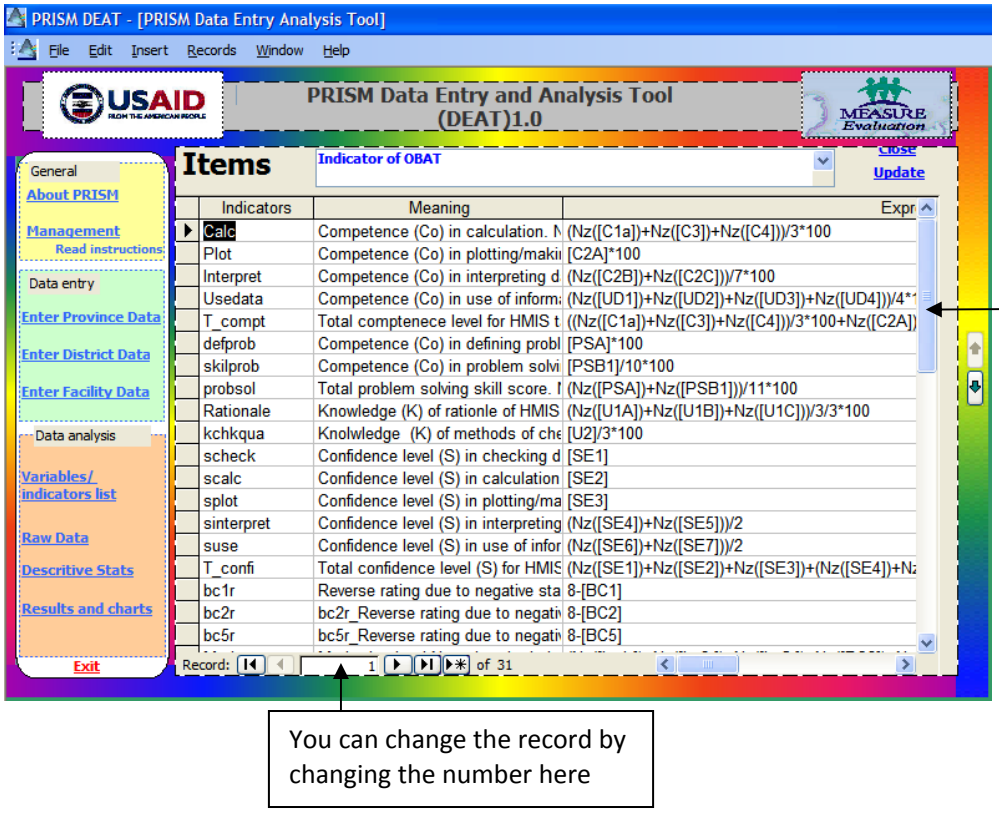
Section - Data Analysis

This chapter illustrates how to conduct the data analysis using PRISM DEAT. There four subsections of data analysis –

1. Variables / Indicators list
2. Raw Data
3. Descriptive Stats
4. Results and charts

3-1. PRISM Variables and Indicators

⇒ Click on Variables / Indicators list and the following window will appear



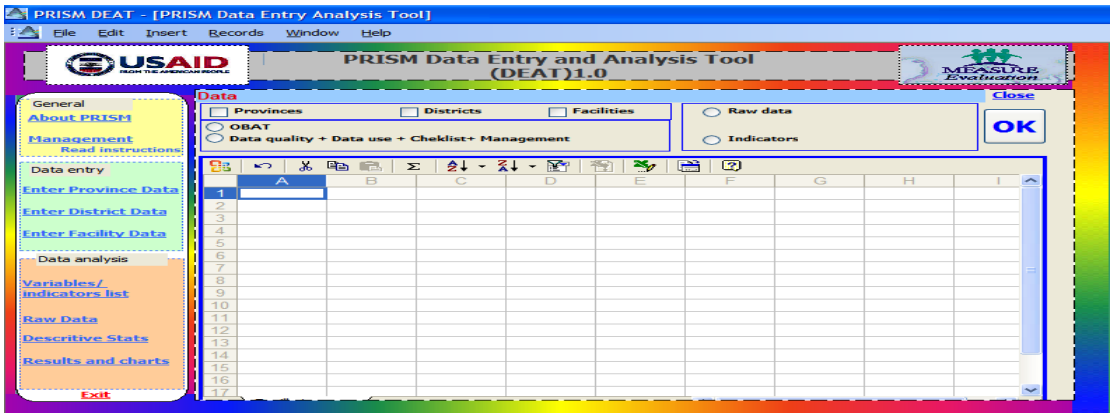
The purpose of this file is to provide you information on what types of variables and indicators are available. The file has three columns.

⇒ **Indicator column** – describes short name of the variable/indicator
⇒ **Meaning column** – explains the meaning of that variable/indicator
⇒ **Expression** column – provides formula on how that specific indicator is created

⇒ Clicking on close button will take you to PRISM framework introduction page
⇒ You can also click on any section or sub-section to leave this page

3.2 Data indicators

⇒ Click on the Raw Data under data analysis, the following window appears



First row has three boxes – province, district and facilities.

⇒ Depending upon which level data you want to analyze, *select the appropriate box for analysis*. For example, if provincial data need to be analyzed then click province

Second row has two boxes – OBAT and Data quality+data use+Checklist+Management

⇒ Depending on which tool data will be analyzed, *click the appropriate box from the following*
- OBAT
- Data quality+data use+Checklist+Management

After first and second rows, there is another box with two headings choices

⇒ Depending on which type of data we are handling – raw data or indicator (which is actually combination of various questions items or it is analyzed using some formula. How these indicators are calculated are presented under Variables / Indicators list), *click the appropriate box from the following*

- Raw data
- Indicators

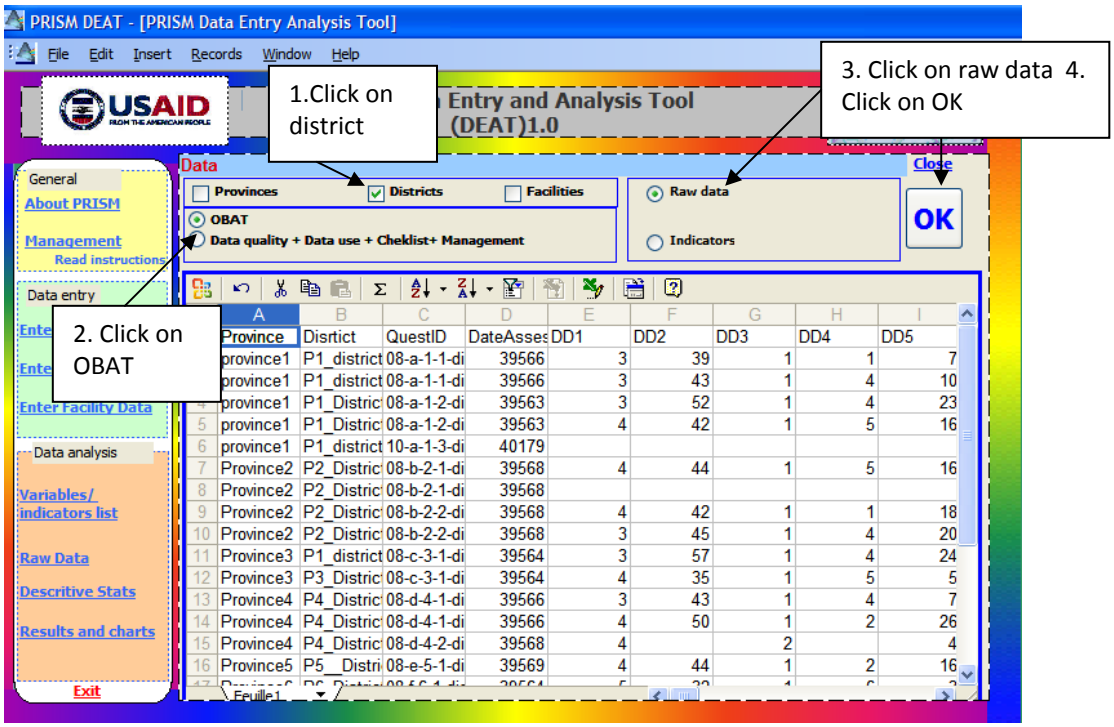
The difference between raw data and indicators is that raw data is the actual responses of the survey respondents, while indicators reflect manipulation of raw data in such a way that it indicate object of interest.

As you have noticed, data sheet of PRISM variable is an excel file, where data appear after appropriate selection of boxes in first and second row and adjacent boxes.

Example 1: There is an existing data file and we wanted to see the raw data of the OBAT at district level. To get the raw data, do the following:

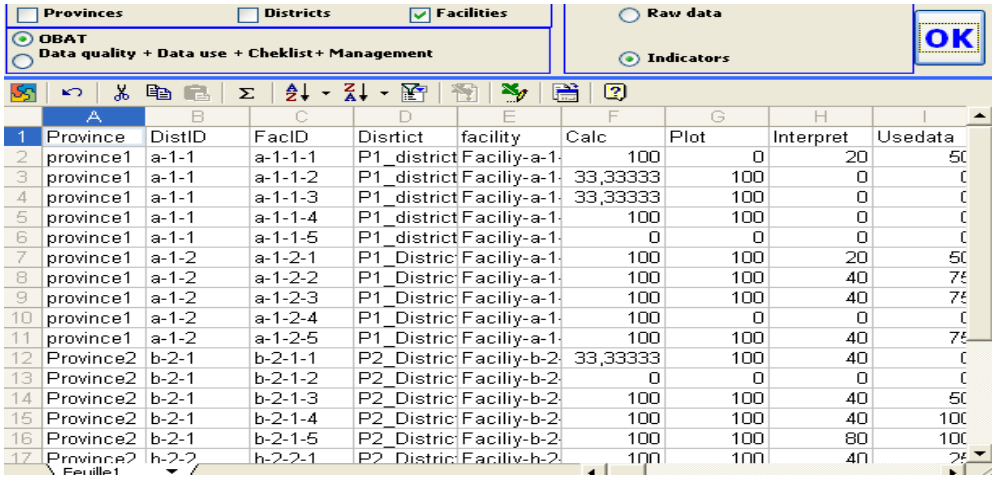
⇒ Click on district,
⇒ Click on OBAT
⇒ Click on raw data
⇒ Click on OK
⇒ The following excel file appears

Note it provides the raw data of the each question in OBAT. You can use arrow to move across rows or column



Example 2: Now, we want to see the indicators under OBAT at district level. Therefore, we *click on indicators* instead of raw data and click on OK, keeping all other boxes intact. A new file appears.

Note that the new excel file shows calc, plot, interpret and other indicators, which are calculated by formula given under PRISM variables and indicator section



This data sheet is good to review any unusual numbers or outliers and identify where that outlier is located. However, it is not good for making any interpretation, which is made possible by results under descriptive statistics

3.3 Descriptive Stats

Descriptive stats is short for descriptive statistics and provide information on the various data items and indicators. The variables are grouped into two categories: 1. Continuous variables; 2. Categorical variables

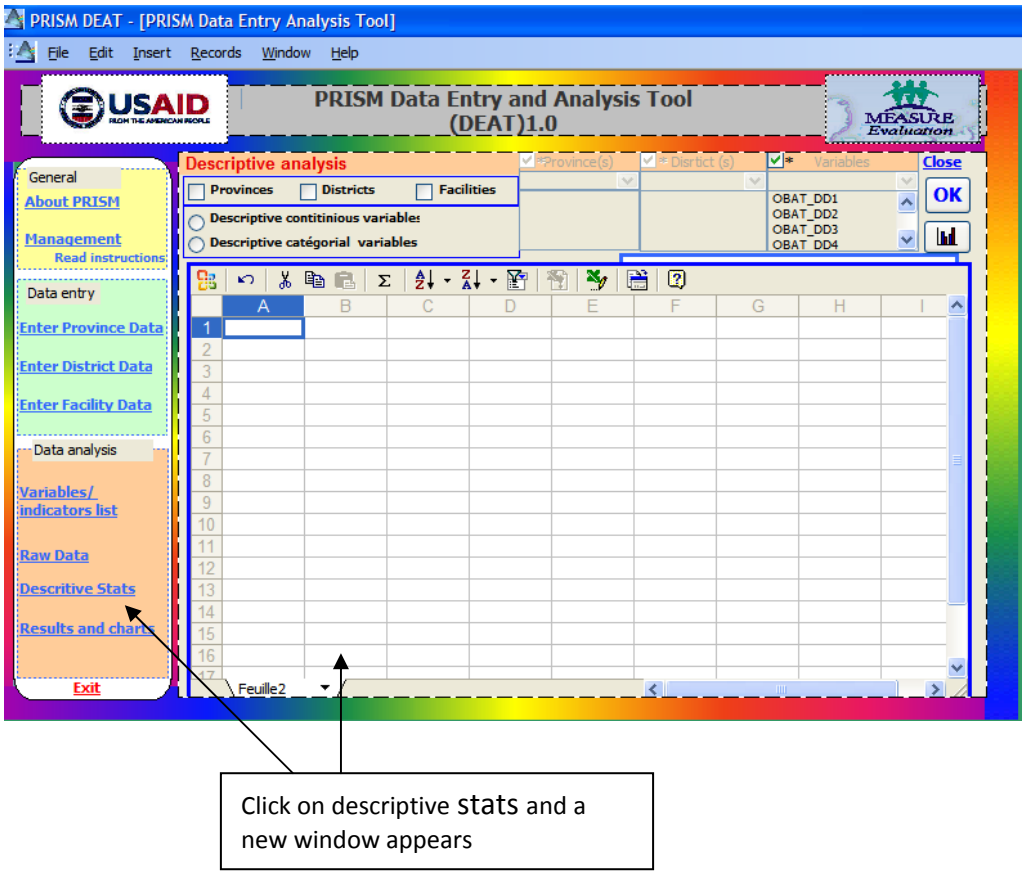
Continuous variables are those variables that have values in a continuous scale such a rating of 1 to 7, or percentile score ranging from 0 to 100.

The continuous variable statistics are described through mean, median, minimum, maximum and standard deviation. Mean provides an average of all responses while median provides information that 50% or more respondents responded in a particular fashion. Minimum and maximum provide the range of responses from lowest to highest, while standard deviation provide how far a mean can vary from one standard deviation.

Categorical variables are those that have response categories such as yes or no, or types of facilities etc. Thus, percentages provide answer to how many in a particular category of response.

It is easier to make comparison when a coefficient is created …….Thus, most of the analysis present the variables responses in percentage.

⇒ Click on the descriptive statistics, under section data analysis, a new window appears as follows:



First Column, first row has three boxes – province, district and facilities.

⇒ Depending upon which level data you want to analyze, *select the appropriate box for analysis*. For example, if provincial data will be analyzed then click province

First column, second row has two boxes – descriptive continuous variables and descriptive categorical variables

⇒ Depending on which tool data will be analyzed, *click the appropriate box from the following*

- descriptive continuous variables
- descriptive categorical variables

Second Column shows province box that have drop down option to select single or multiple provinces. Only data of the selected province(s) will be analyzed.

Third column shows district box that have drop down option to select single or multiple districts. Only data of the selected district(s) will be analyzed

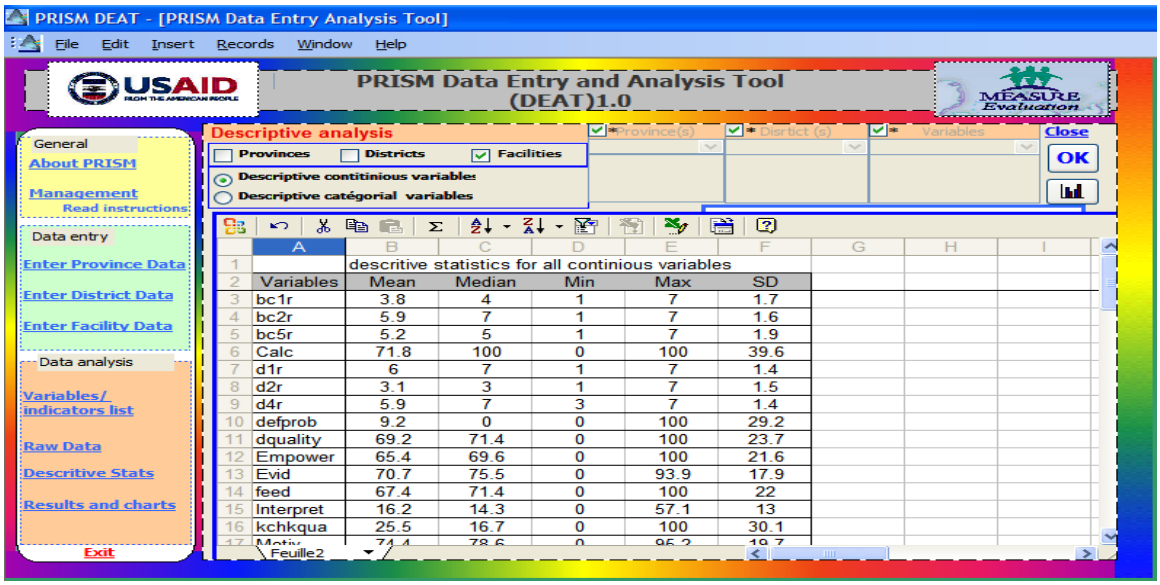
Fourth Column show facilities box that have drop down option to select variables**.** Only data of the selected variables(s) is analyzed. *If no variable is chosen for analysis, the default statistics is the descriptive statistics of all variables*

Analyzing descriptive statistics

Example 1: There is existing data file and we want to get descriptive statistics on the continuous variables of all facilities. To get the descriptive of all continuous variables, do the following:

⇒ Click on facilities,
⇒ Click on continuous variable statistics
⇒ Click on OK
⇒ The following excel file appears

Note it provide the descriptive data of all continuous variables. You can use arrow to move across rows to see all of them

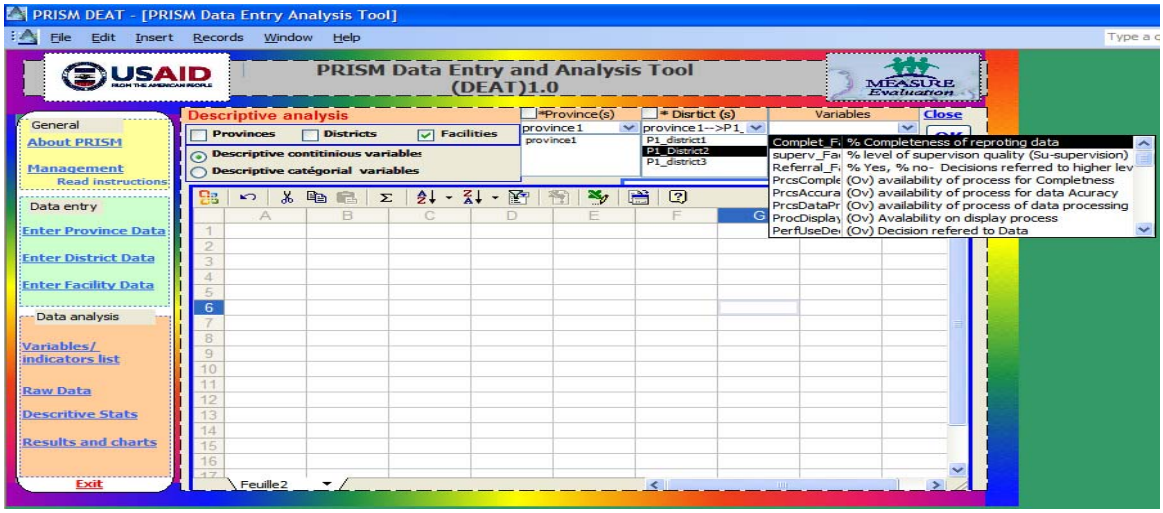


Example 2: There is existing data file and we want to get descriptive statistics on the continuous variables of a particular province and a particular district and all facilities in that district. To get the data, do the following:

⇒ Click on facilities,
⇒ Click on continuous variable statistics
⇒ Click on the arrow of the province and select the particular province
⇒ Click on the district and select the particular district

⇒ Click on the variables to select the variable(s)
⇒ Click on OK
⇒ The following excel file appears

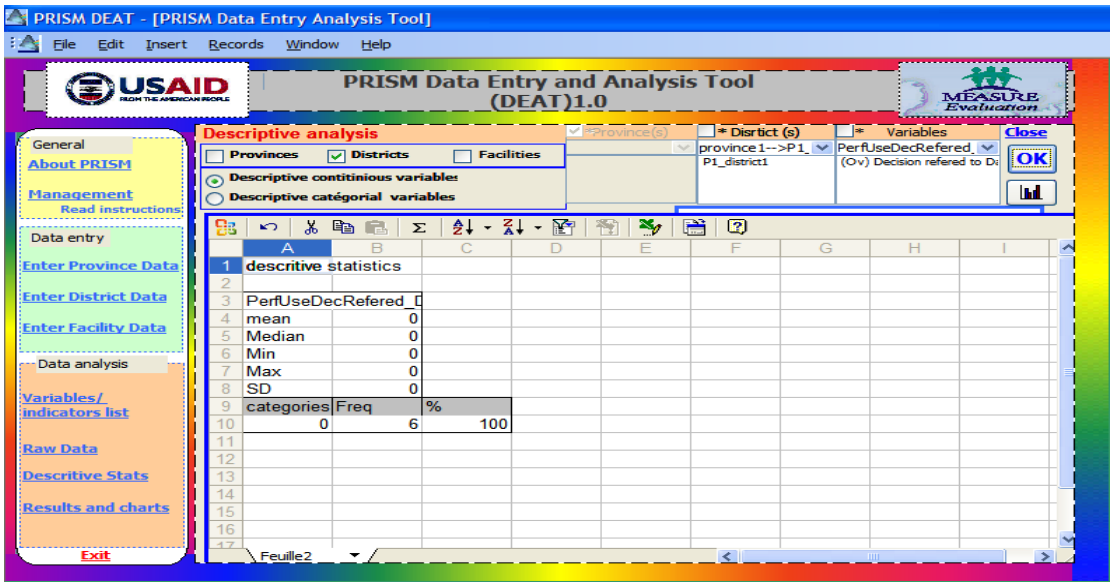
Note it provide the descriptive data of all continuous variables. You can use arrow to move across rows to see all of them



Example 3: There is existing data file and we wanted to get descriptive statistics on the continuous variables of a particular district and all facilities in that district. To get the data, do the following:

⇒ Click on district,
⇒ Click on continuous variable statistics
⇒ Click on the district and select the particular district
⇒ Click on the variables to select the variable(s)
⇒ Click on OK
⇒ The following excel file appears

Note it provide the descriptive data of all continuous variables. You can use arrow to move across rows to see all of them



Thus, the analysis process could be repeated depending upon what data you need and at what level and selecting the appropriate boxes under descriptive analysis.

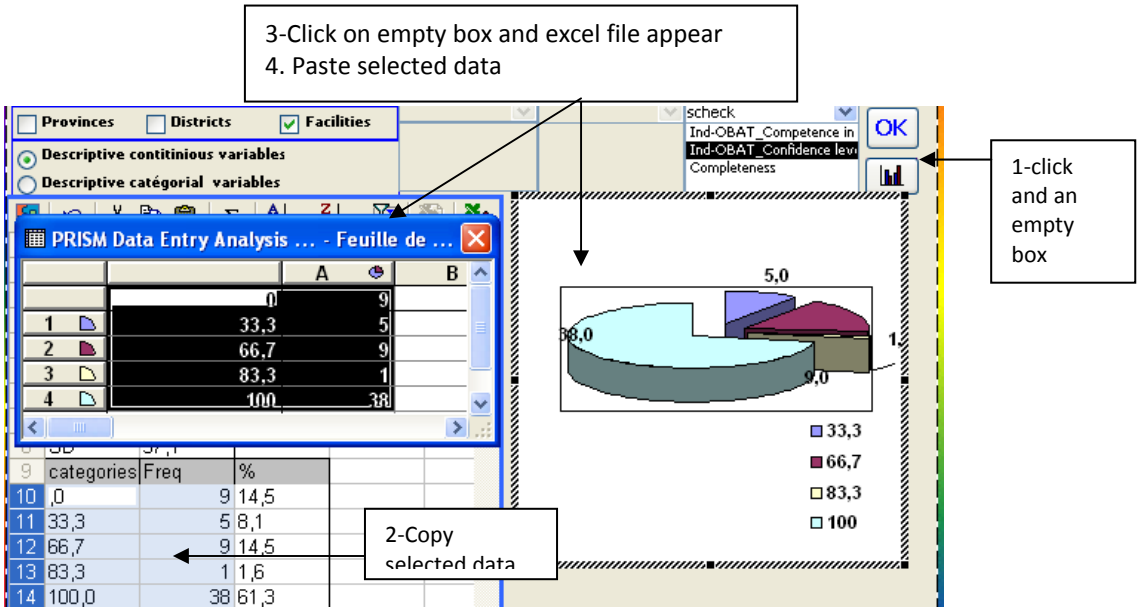
Making Chart of the Descriptive Statistics

PRISM DEAT descriptive analysis section provides you access to make chart using descriptive statistics.

Note the Chart box icon is below OK box icon under the descriptive analysis sheet. A click on Chart icon provides space where a graph could be created.

Make sure that you have already conducted the analysis for selected variable and data is available in the excel sheet.

⇒ Click Chart icon, an empty box appears
⇒ Copy the data from the excel file you want to make a chart
⇒ Click on empty box and excel file appear
⇒ Paste selected data
⇒ Chart is created in empty box
⇒ With left click, you can make changes in types of chart, font etc.
⇒



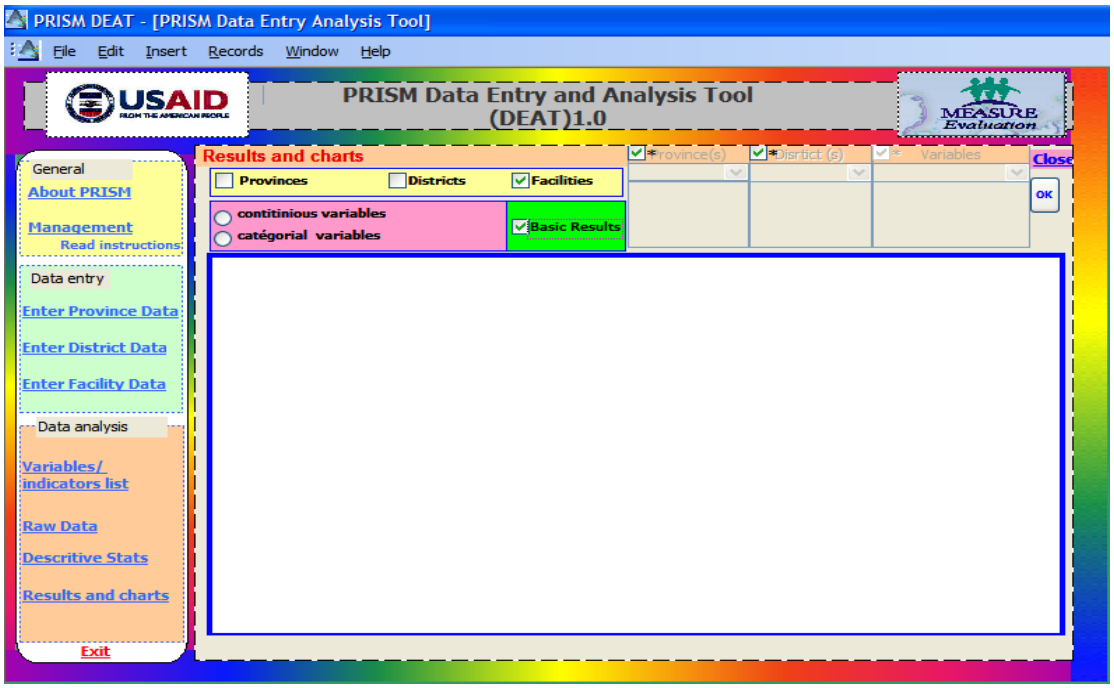
3-4. Results and Charts

The data analysis last section is about display of results in charts. You learned from previous sections how to get the basic descriptive statistics on a variable and create a chart in descriptive section. However, under results and charts, we provide two options – 1. Basic results and 2. Conducting comparative analysis of your choices. Advanced statistical analysis using Excel or other statistical package such as Stata, SPSS, SAS, etc can be done by importing data file in those packages.

Basic results – here all major variables are analyzed and displayed in charts. Such level of data quality, use of information, availability of resources, confidence level for HMIS tasks, competence level for HMIS tasks, promotion of a culture of information.

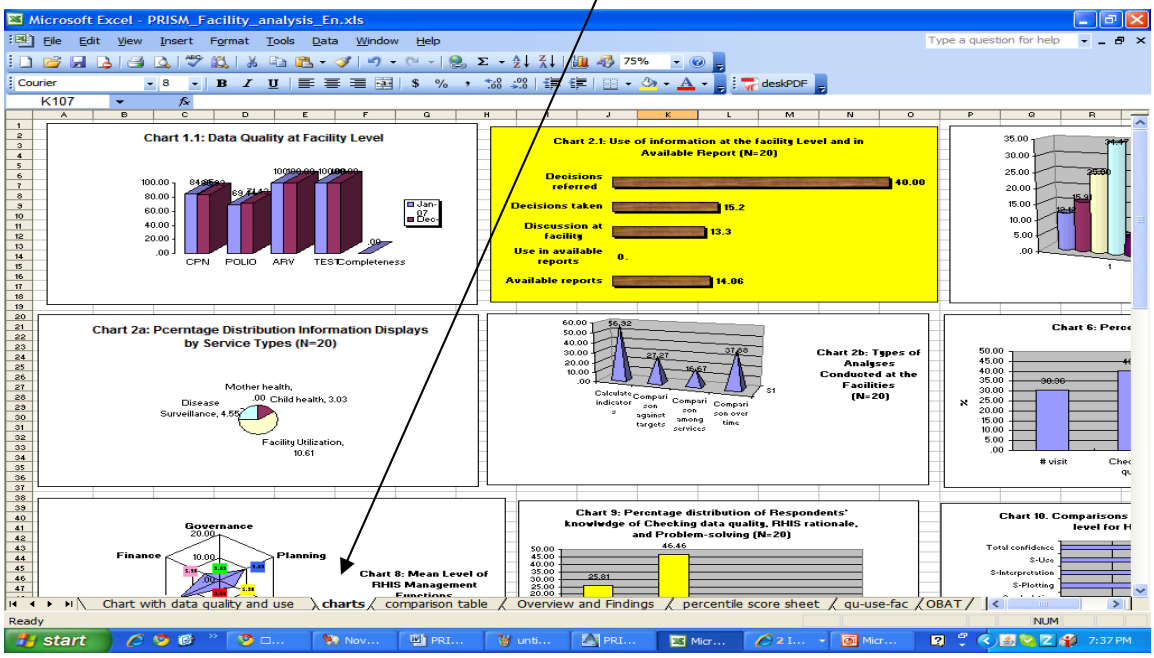
These results are mostly presented in percentages and for comparison purposes mean is used, as it is easier to compare whether means of the two variables are closer or far apart from each other indicating closeness or gap that needs to be bridged. To get basic results:

⇒ Click on results and chart and following window appears



⇒ Select level of analysis – facilities, district or province

⇒ Select basic results and click OK, and following Excel file will appear showing all kind of charts. Make sure to select the "Charts" tab that is located at the bottom of the sheet.



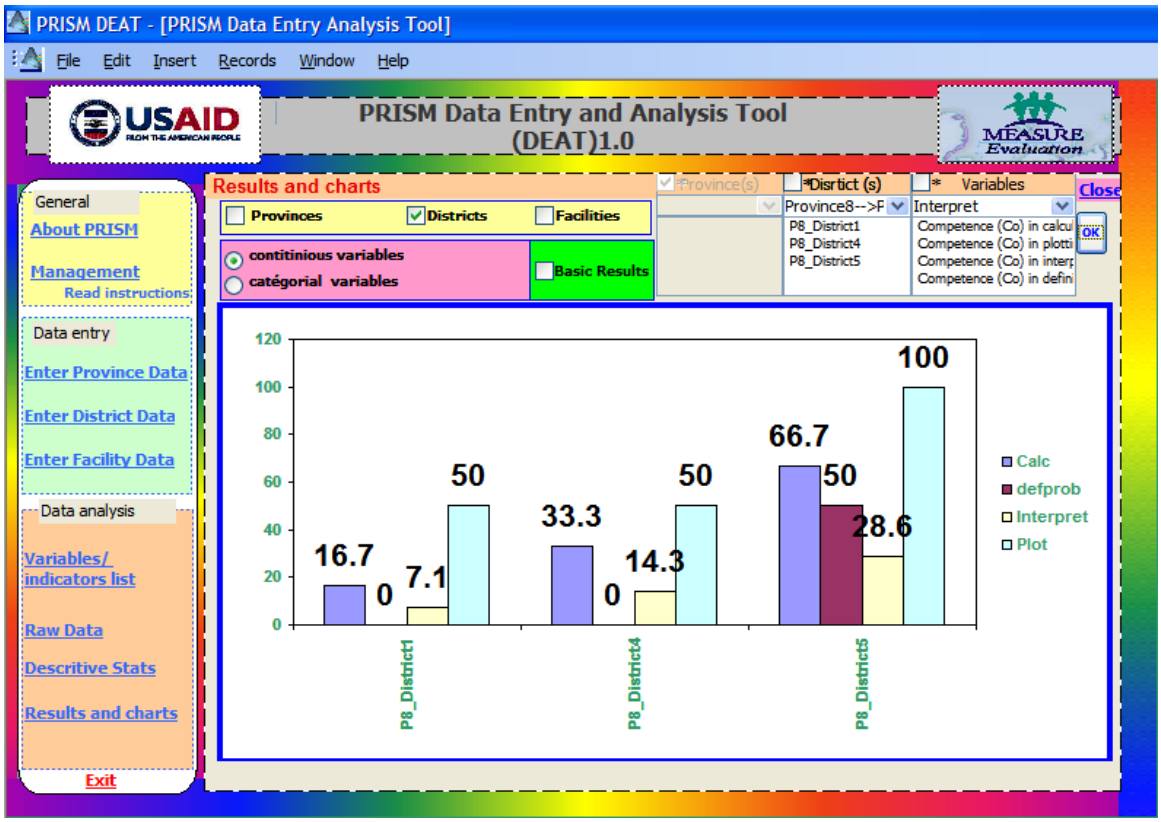
⇒ Select the appropriate charts for your use or you can use all charts to write a report about the assessment.

Chart - If you want to do analysis beyond the displayed results under basic analysis then use the chart option to create your own tables, and charts. To obtain chart of your choice do the following –

⇒ Select the level and the specific location (specific province or district) otherwise all data of that level will be used for analysis
⇒ Choose the type of data: continuous variables or categorical variables
⇒ Choose the variables and click OK

Example - we want to know in three districts of a given province, what is the average competence level for calculation, making a plot, interpretation, use of information, problem solving and checking data accuracy.

⇒ Click on the district and select the specified 3 districts
⇒ Click on variables and select the appropriate four variables
⇒ Choose continuous variables, as competence level is calculated percentile scores
⇒ Click OK
⇒ The following chart will appear



Thus, you can create single or multivariate chart of your choices, depending on level of analysis and the types of variables - continuous or categorical.

Advance analysis – to conduct advanced statistical analysis such as correlation, regression, modelling, time series, then it is better to use the access data file and import it in any of the statistical package that can do advances analysis and with which you are familiar with such as SPSS, Stata, SAS, etc.

Chapter X:

Interpreting PRISM Tool Findings

Chapter X: Interpreting PRISM Tool Findings

This chapter provides information on how to interpret the PRISM tools findings and later discusses implications for developing various interventions.

Section - Principles of interpretations

There are certain general principles that are common to all assessments and also apply to PRISM tools findings. These include the following:

- Assessment study design
- Sampling methodology
- Types of variables
- Types of analysis
- Context

Assessment study design

The design helps in explaining the findings and also illustrates limitation of the study. In a cross-sectional design, it is possible to know what the situation is and how various variables are associated with to each other. It is exploratory in nature. However, causal analysis is not possible. On the other hand a prospective study design helps in causal analysis. There are other study designs which helps answering many other questions. However, our purpose is to illustrate that before interpreting the data, pay attention to the study design to make appropriate interpretations.

Sampling methodology

Sampling methodology also expands and limits the generalizibility of the findings. For example, if the data was collected using any types of probability sampling than results could be generalizable to the whole sampling frame, while convenience sampling will limit generalizing the findings to whole sampling frame unless triangulated with other data sources.

Sample size will also affect the generalization of results. As discussed in Chapter VIII, a minimum sample 100 is required for estimate a population characteristic using binomial distribution or 210 using 30 cluster sampling, while a sample of 19 using LQAS is good for testing hypothesis whether a standard or target is achieved or not. If the sampling universe is small than using census provide excellent results.

Types of variables

Questions having yes and no answer are easy to interpret, because a percentage distribution of study participants or availability of material etc., informs how many study participants are in yes or no cate-

gories or whether a specific material was present or not.

Some time question asks for quantity of material which can take the form of a range for example, availability of computer which could be zero or 100 or more. Similarly, the strengths of belief could be measured on a rating scale such as 0 to 100 or 1 to 7 or 1 to 5. Thus, the resulting variable is a continuous variable. In addition, sometime, the yes and no answers could be combined to create an index of score and the new index variable becomes a continuous variable. Please note to avoid any confusion in interpreting index score, as they have different number of items, we converted them into a percentile score, which not help in easy interpretation and making comparison with other percentile score.

To interpret a continuous variable, usually mean (average), median (the value found at the exact middle of the set of values or 50th value), standard deviation,[7] and range is described. In normal distribution, the mean and median would be the same that is 50%. If the mean is shifted to right (e.g, 70%) that indicates that more respondents provide positive responses, while shift to left (e.g., 30%) indicates the opposite. We have used mean to describe as most people have a better understanding of mean than median. Thus, we have used mean score to describe a continuous variable. For those who are interested in other descriptive, PRISM DEAT allows to get that kind of analysis and interpret them accordingly.

Types of analysis

All kinds of analysis are possible using PRISM tools, given the sample size is adequate for that analysis. However, simple frequency distribution of answer responses provides basic information about a given question. Thus, we start with that. Second, we provide mean percentile scores for continuous variable, as it tells on average where the study participants stand. Third, there are many constructs such as self-efficacy or confidence level for RHIS tasks, competence level of RHIS tasks, a culture of information which are composite of many dimensions. Thus, a mean score of overall constructs and its dimensions can be used to compare which dimension score is lower than other, indicating interventions for improving them. Fourth, after making comparisons among different dimensions with in a construct, it is possible to make comparisons with other variables.

The comparative analysis among various components of the PRISM framework illustrate where the strengths and weaknesses of the RHIS lie. This information then helps in developing interventions.

Context

The use of PRISM tools provides a comprehensive picture of the RHIS and a use of specific tool could enlighten about a particular RHIS component. However, the context could make these findings different. For example, in a centralized system, the data accuracy and use of information could be very high at the higher level but the findings might shows that the knowledge and skills to check data quality of

[7] The Standard Deviation shows the relation that set of scores has to the mean of the sample

use of information at the lower level is limited. One could say that the data quality checks or use of information is carried out at a higher level and thus the system does not have any weakness, because it is designed as such where lower level staff is supposed to collect information and send it upwards. As long as those functions are performed adequately then the system is working at its optimal. On the other hand, one can argue that if the senior management empower staff at the lower level and improve their skills, it will not only improve the capacity of staff to use information for better management of services but will also decrease supervision time and costs. However, which interpretation should be taken up depend upon the senior management, as it has different implications for actions and interventions. Thus, it is very important that each finding should be interpreted in line of RHIS design and context in which the RHIS operates.

Another important to note is that we have provided criteria for developing standards or given some standards which have become normative standard for any RHIS. However, each context need to develop their own level of standards as two situations could not be the same. Second, it implies that level of standards could also be improved continuously. Thus, we strongly suggest that no standard or level of standard is absolute but should be considered relative and be used in given situation accordingly.

Section - Diagnostic Tool

Diagnostic finding have both dichotomous and continuous variables around availability of resources, data quality and information use, supervision quality, RHIS technical determinants etc. Appendix B, and tables 1.1 to 1.5 provide information how various indicators are constructed and calculated for diagnostic tool. The percentile score of each indicator could be displayed as mean, median, minimum and maximum score. In normal distribution, the mean and median would be the same that is 50%. If the mean is shifted to right (60%) that indicates that the data quality of information use level is high, while shift to left (40%) indicates the opposite.

Examples

In country A, RHIS performance assessment was conducted in a district Z using diagnostic tool. They randomly selected 12 facilities and the data was analyzed using Excel. Chart I shows that 80% of the facilities completed all data elements, while 85% of the facilities submitted data to the district. The timeliness was 70%, indicating that 70% of the facilities submitted their reports on specified date. The data accuracy at the district level was 50%, indicating that data entry needs improvement.

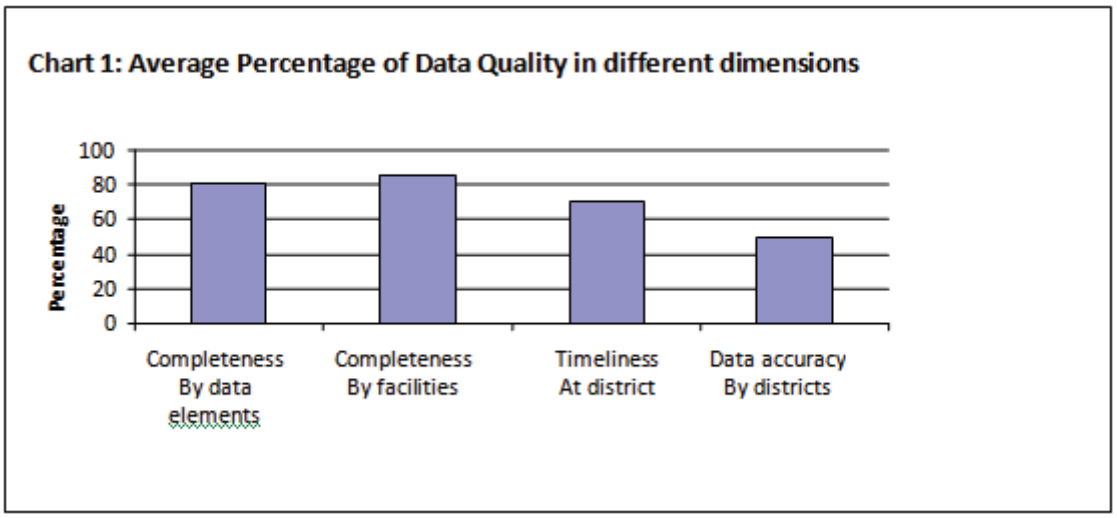


Chart 2 shows that information use was low at facility level, because 30% facilities used information for monitoring, 40% facilities were having discussion on RHIS information and 20% making decisions after discussion. Ten percent of the facilities showed promotional activities for use of information, indicating that senior management need to promote more use of information.

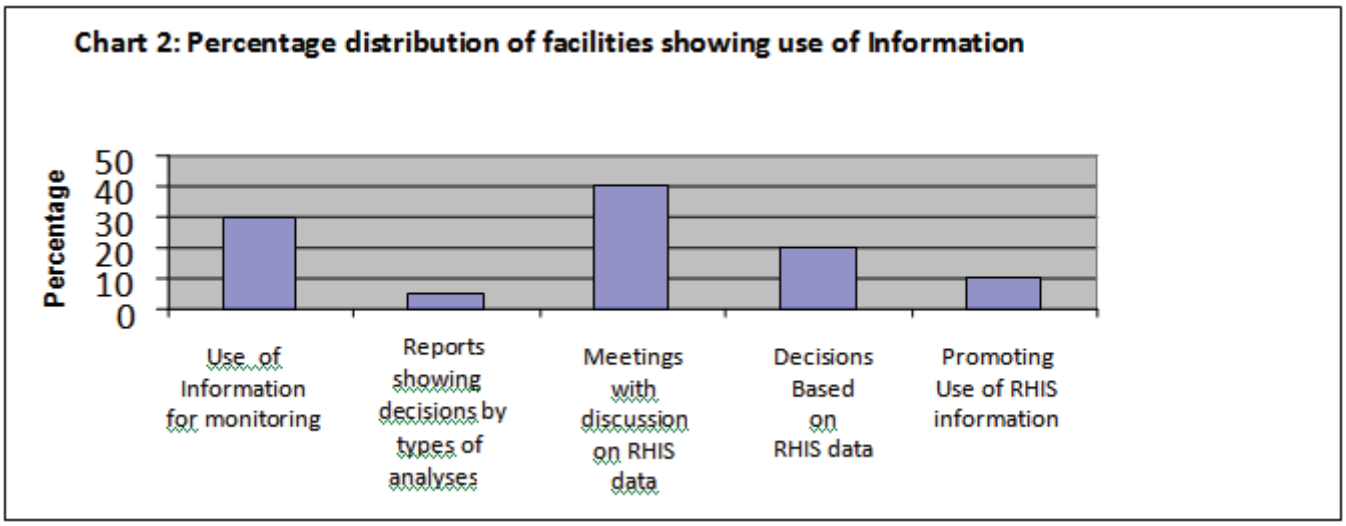


Chart 3 shows that on average the facilities have shown limited availability of RHIS processes, as less than 10 percent of the criteria for assessing RHIS processes were found to exist, indicating that these processes need to be strengthened.

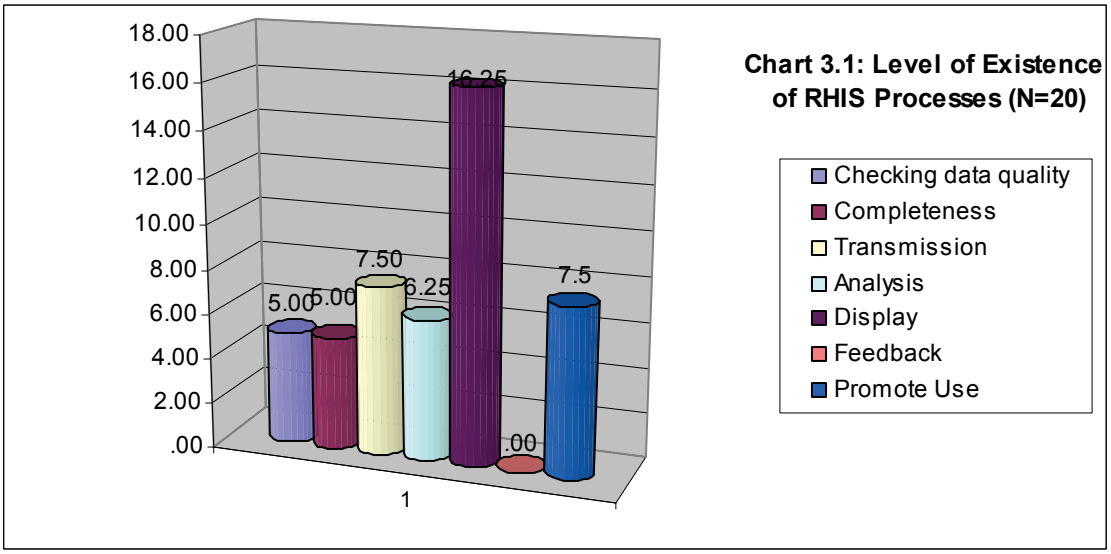
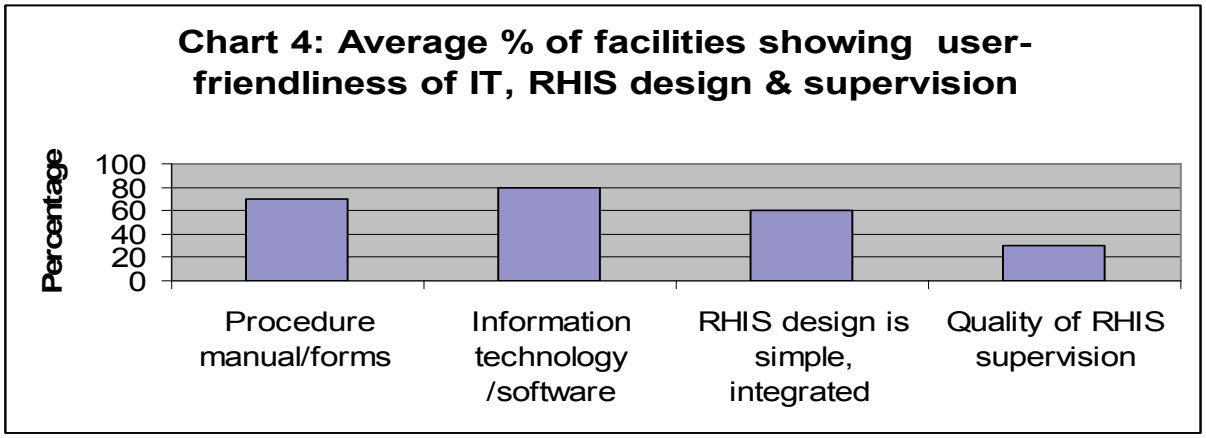


Chart 4 shows various technical determinants that affect RHIS performance. It shows that on average 80% of the district staff perceived that information technology and software is user-friendly so is the RHIS design and procedure manual and forms, while only overall 50% of the supervision quality criteria were met, indicating need for improvement in this area.



In conclusion, we could say that performance diagnostic tool provide objective assessment of level of data quality and information use, as well as about RHIS processes and technical determinants. The comparisons among RHIS performance, RHIS process and technical determinants could highlight the gaps, which provide opportunities for relevant and appropriate interventions.

Section - Office/Facility Checklist

Facility checklist provides information on availability of resources. One of the examples is availability of equipment as depicted in the Table 4. It is simple to interpret as the table is self-explanatory. It shows that 70% of the facilities do not have computer while 55% of the facilities reported to have at least one calculator.

Similarly, the various other supplies for RHIS and human resources data are presented. First, each question will provide information on the level of availability of that resources. This, it is possible to identify the strengths and weakness in resources by comparing with in these categories.

Second, it is possible to compare availability of resources with RHIS performance and other RHIS processes and identify whether they are possible cause of the low RHIS performance or RHIS processes.

Table 4: Availability of resources	Category	Number	Percent
a. Computer	.0	14	70
	1.0	5	25
	≥2	1	5
b. Data backup	20.0	4	20
c. Printer	.0	15	75
	1.0	5	25
	≥2	0	0
d. UPS	.0	16	90
	1.0	4	10
	≥2	0	0
e. Generators	.0	11	70
	1.0	3	25
	>=2	0	5
f. Regular telephone	.0	14	100
	1.0	5	0
	≥2	1	0
g. Mobile telephone	.0	20	100
	1.0	0	0
	≥2	0	0
h. Radio phone	.0	13	65
	1.0	7	35
	≥2	0	0
i. Internet	5.0	1	20
j. Calculator	.0	6	30
	1.0	11	55
	≥2	3	15

Section - Management Assessment Tool

In management assessment tool, the various management functions are assessed by more than two items. Thus, an index percentile score for each function is calculated. See Appendix B, Tables 1.6 how various indicators are constructed and calculated for management assessment tool. The percentile score informs how many criteria are met. For example, if all criteria are met then it will take a score of 100% while no criteria met will lead to zero percentile score. However, to make comparison among various management functions, mean score is used and presented in the chart.

Example

In country A, the findings from management assessment tool (Chart 8) at facility level showed that all management functions takes a means value ot less than 50% indicating that less than half of the assessment criteria were met, indicating that RHIS management fuctions are not its optimum. Second, quality standards and financial criteria are total absent, indicating that quality standards were not met and the finances for RHIS at not managed at the facility level. Similarly, other management functions such as planning, supervision and training were also weak because none of them has a mean value of more than 30%.

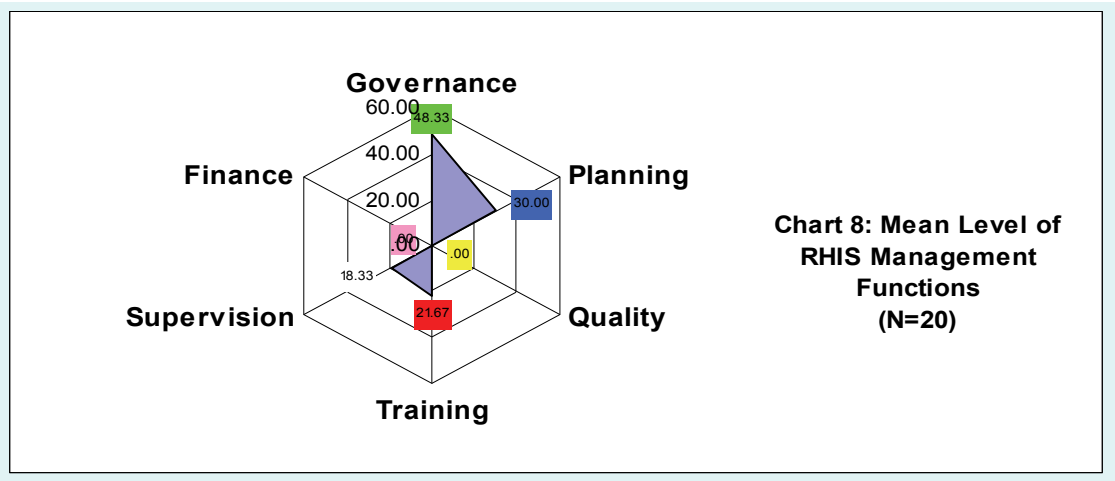


Chart 8: Mean Level of RHIS Management Functions (N=20)

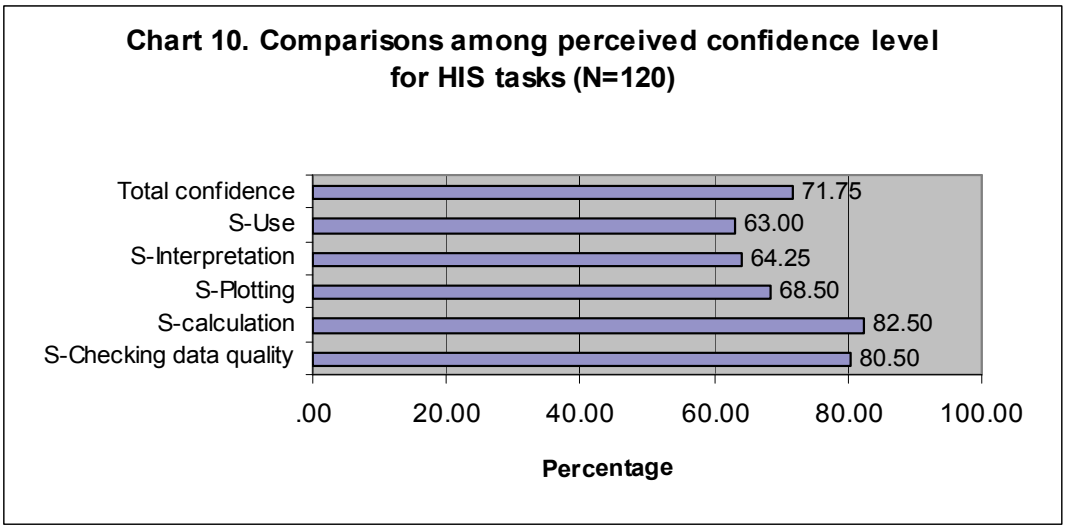
When these findings are compared with low data accuracy and quality of supervision (chart 1 and 4), it clear that there is a consistency in findings that low performance is associated with low support management functions, especially training, supervision and use of quality standards. In conclusion, Management assessment tool provides a good estimate of the management support services and when compare with performance shows how these two affecting each other.

Section - Organizational and Behavioral Assessment Tool (OBAT)

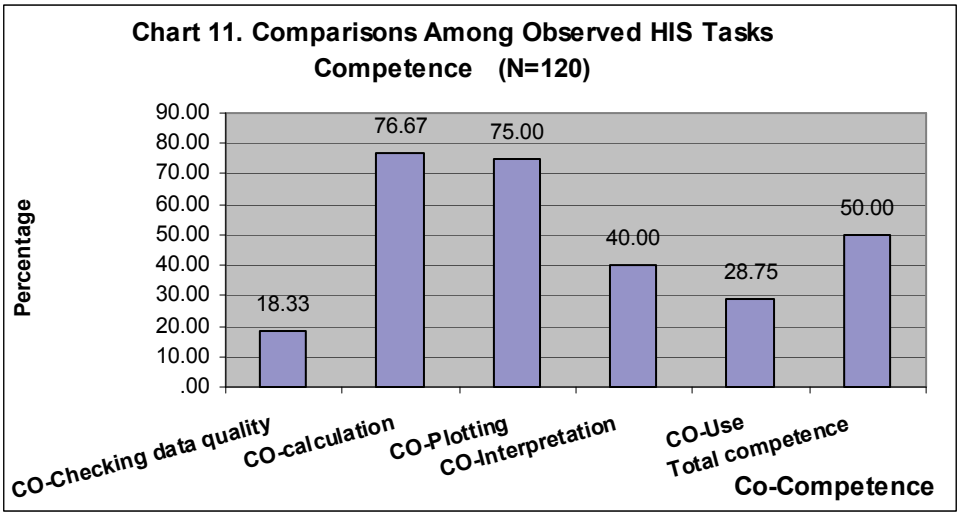
In OBAT, most the variables are composite indices of more than two question items. Thus, we have converted them into percentile score for easy interpretation and for comparisons, as indicated in earlier section on principle of interpretation.

Appendix B, Tables 1.7 and 1.8 provide information how various indicators are constructed and calculated for OBAT. The self efficacy or confidence percentile scores for RHIS tasks are calculated for checking data quality, calculation, plotting the given data, interpretation and information use. Chart 10 provides an example of the data on confidence level. It shows that overall mean confidence for RHIS tasks is 71%, while it is lowest for information use (63%) and highest for checking data quality (80.5%), while confidence for other tasks lies in between lowest and highest confidence level. It indicates that respondents feel less confident in interpreting data and using information, while more confident in checking data quality.

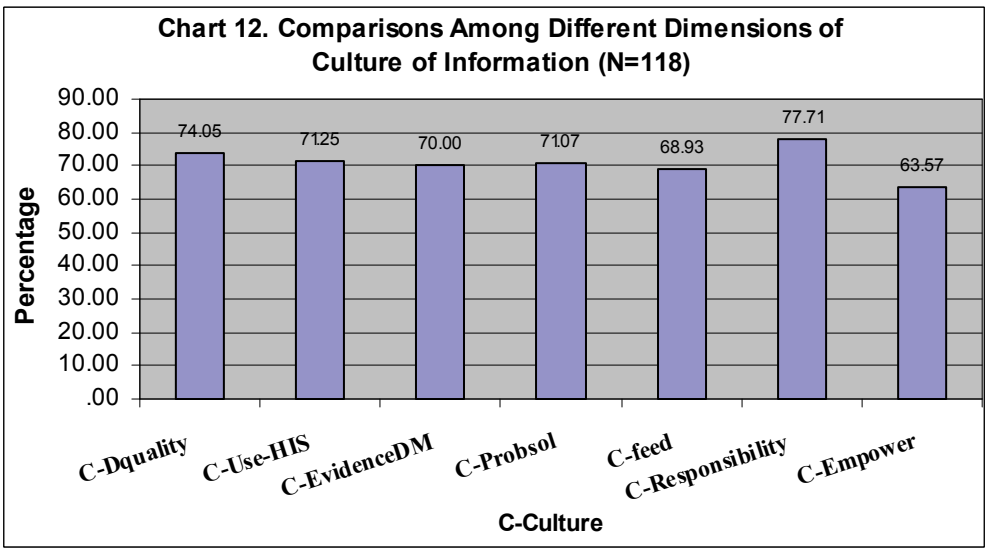
Example



Similarly, Chart 11 provide information about observed competence level of RHIS tasks. The overall mean competence level of RHIS tasks is 50% indicating that the respondents were able to accomplish half of the given RHIS tasks. When individual tasks were reviewed then it showed that respondents on average completed only 18%, 40% and 29% of the data quality check, interpretation and use of information tasks respectively, while on average 75 or more tasks were accomplished related to calculation and plotting the given data. The chart shows that it is possible to calculate overall competence level as well as make comparison among the RHIS tasks to identify strengths and weaknesses in them.



Promotion of a culture of information is assessed by seven dimensiosn which explore whether the health department emphasize data quality, us eRHIS information, foster evidence-based decision-making, promote problem-solving, feedback from community and staff, strengthen sense of responsibility and empower staff to carry out their tasks. Chart 12 provides information that respondents on average (mean=68% or more) strongly believed that health department all these dimensions of promoting a culture of information.



The comparison among the different dimensions of a construct to identify which dimensions are weak and which are stronger has its value. In addition, studying the various components of the RHIS on their own might give a different picture than when these components are studied together, creating a holistic picture of the system. Therefore, it is very important to know how these constructs relates to other components of the RHIS and compare them for their relative importance. Comparison could

provide many answer to question such as, Are the constructs depicting different components of the RHIS are working in harmony or producing gaps in RHIS performance? Thus, comparative analyses among different components of the RHIS could provide a better picture of the RHIS. For example, chart 12 shows that while on average respondents believe strongly that department promotes data quality, use of RHIS information and problem solving which means we might also find high level of RHIS competence in that areas. However, chart 15 with comparative analyses showed that it is not the case and in practice the respondents' perceptions did not match observed competence levels for checking data quality, use of information and problem solving. Similarly, chart 14 shows a difference between confidence level for RHIS tasks and related observed competence. Another comparison among knowledge of why specific data are collected under RHIS and problem solving shows gaps indicating that if people do not know why they are collecting data will also affect their ability of solve problem, as they would have problem in identifying a problem using data before solving the problem.

All these situations show discordance among various components of the RHIS and show some systemic issues. Thus, the contextual knowledge of the RHIS is very important in understanding these gaps between perceptions and objective reality.

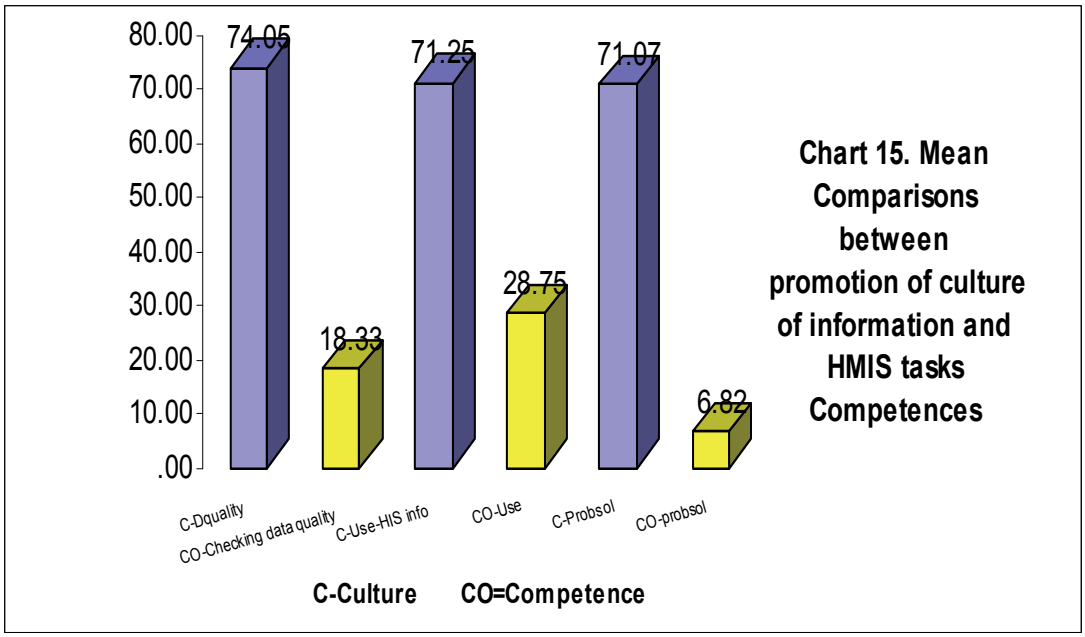


Chart 15. Mean Comparisons between promotion of culture of information and HMIS tasks Competences

Chart 14. Mean Comparisons among Perceived Confidence and Observed HIS Tasks Competence (N=118)

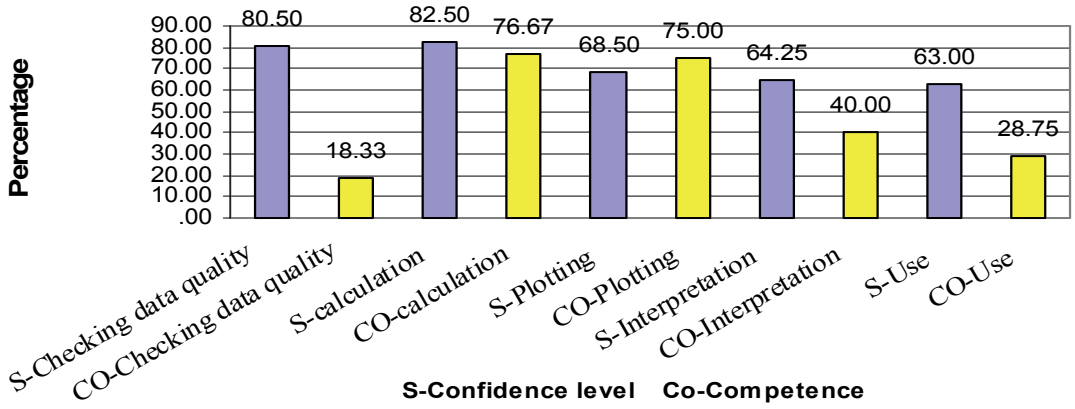
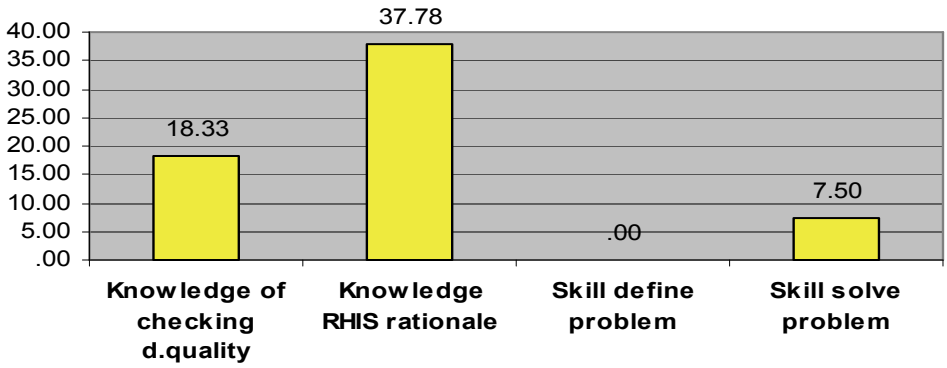


Chart 9: Percentage distribution of Respondents' knowlwdge of Checking data quality, RHIS rationale, and Problem-solving (N=20)



The gaps in RHIS performance and its associated organizational and behavioral factors could take many forms. Some of them could be:

- RHIS implementers did not pay attention to data quality and use.
- RHIS implementers have poor knowledge, skills, low self-efficacy of HMIS tasks and low motivation to perform them.
- RHIS implementers might have high self-efficacy for HMIS tasks and low performance.
- RHIS implementers might perceived that their organization promote culture of information indicating that there is emphasis on data quality, use of information, evidence-based decision-making, problem solving, feedback, sense of responsibility, and empowerment/accountability. However, their poor RHIS performance does not correspond with promotion of culture of information.
- RHIS implementers might perceive high availability of resources for RHIS, supportive management, but still have low performance.

Section - Implications for Interventions

The PRISM framework hypothesizes improved RHIS performance (data quality and use) is a function of organizational (promotion of culture of information, better management functions, availability of resources etc), behavioral factors (increased RHIS knowledge, tasks competence, self-efficacy and motivation) and technical factors (user friendly information technology and database). The weaknesses in performance and in other components imply that the causes should be explored internally, within the system. Rather than blaming the individuals, systems processes need to be modified or changed. Use of quality or performance improvement tools such as cause and effect analysis, priority matrix, could be one example in that direction.

RHIS is like a self-regulating system, where information is collected to continuously improve performance. However, the self-regulation is missing because the RHIS design usually does not provide tools for self-regulation. Thus, we suggest of promoting self-regulation through use of control chart could not only help maintaining certain level of performance but also increasing bar when the average performance starts reaching the upper limit of the target performance.

Improving HMIS performance is a systemic function. Thus, all (the management and staff) should be responsible for it and no dichotomy should be made between data collectors and users. Thus, the management needs to work very closely with all involving in RHIS for facilitating their work, empowering them to make decision about their work. The empowerment increases sense of responsibility and accountability. It improves motivation. Upper management commitment for improving RHIS performance through sharing of directive to use information or sharing stories of the use of information will send a clear message to all members that management is serious. Similarly, the management acting as a role model or "walking the talk" for all, shows what the expected and desirable organizational behaviors are.

Time and again we have found that the simple procedures, like checking data accuracy, having staff meeting and discussing RHIS information for making decisions, either do not exist or followed rarely, causing frustration among staff that no one pays attention to the collected data, leading to limited motivation to use data. Emphasizing these procedures through directives and creating mechanisms for negative consequences could trigger the momentum to move forward and create better practices for using information for better health services performance.

Another important common finding is that respondents complain that they either do not have power to make decision based on the collected data. There is some truth in it and some notion of shelving the accountability. There is a need reemphasize responsibility by teaching then skills in advocacy to expand their sphere of influence to solve community health problems. They need to learn to work with community leaders and other members of their organization to advocate using RHIS information to inform public of the gravity of situation and rally them for being part of solving the problem.

The rewards system for reinforcing the positive behaviors for RHIS tasks needs strengthening. It could take intangible to tangible from such as recognition of good work, providing recognition certificate to some monetary rewards or early promotion.

Appendix A:

Construction & Scoring of Variables

Appendix A: Construction & Scoring of Variables

Promotion of culture of information

Promotion of culture of information was operationally defined as, "the capacity and control to promote values and beliefs among members of a health organization for collection, analysis and use of information to accomplish its goals and mission." To assess whether a health department promotes culture of information, the construct was operationalized under seven dimensions: 1) data quality; 2) use of information; 3) evidence based decision making; 4) problem solving skills; 5) feedback from staff and community; 6) sense of responsibility; and 7) accountability & empowerment of staff. The responses for items under each dimension are aggregated and divided by the total number of items, and multiplied by 100 to get a percentile score. The dimensions and their items are described below.

1. **Data Quality:** Definition **-**The extent to which health department gives importance to data quality (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, superiors*

- S3. Emphasize data quality in monthly reports

2. Use of information Definition **-**The extent to which health department emphasize and use data from HMIS (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, superiors & staff*

- S10. Use HMIS data for setting targets and monitoring
- P9. Feel that data collection is an important activity
- P11. Rely on data for planning and monitoring set target
- P15. Facilities are directed to display data for monitoring their set target
- P25. Put a lot of efforts on HMIS activities

3. Evidence-based decision-making Definition **-**The extent to which health department uses evidence from various resources and and other objective criteria for decision-making (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, decisions are based on*

- D1. Personal liking (Reverse rating)
- D2. Superiors' directives (Reverse rating)
- D4. Evidence/facts
- D5. Political interference (Reverse rating)
- D6. Strategic objectives

- D7. Community health needs
- D8. Considering costs
- D9. Considering all alternatives and their consequences
- D10. HMIS data

4. Problem solving Definition **-**The extent to which health department staff has the capacity for problem solving (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, staff*

- P16. Can gather data to find the root cause(s) of the problem
- P17. Can develop appropriate criteria for selecting Intervention for a given problem
- P18. Can develop appropriate outcomes of a particular intervention
- P19. Can evaluate whether the targets /outcomes have been achieved

5. Feedback Definition **-**The extent to which health department promote various types of feedback (Scale rating are from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, superiors*

- S2. Seek feedback from concerned persons
- S8. Discuss conflicts openly to resolve them
- S9. Seek feedback from concerned community

6. Responsibility Definition **-**The extent to which people feel responsibility towards their work and its impact by being honest, punctual, ethical and making a difference in their clients lives. (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, staff*

- P1. Perform duties honestly
- P2. Are punctual
- P3. Help each other in serving the patients/communities
- P4. Feel committed in improving health status of the target population
- P5. Live on their earned money (do not take bribe)
- P6. Set appropriate and doable target of their performance
- P21. Are told that their efforts make a difference in improving health status of the target population
- P23. Usually document what they do
- P24. Always tell the truth

7. Empowerment/ Accountability Definition **-**The extent to which health department gives the authority to make decision and people feel accountable for their decision-making. (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, staff*

- P20. Are empowered to make decisions
- P22. Are held accountable for their performance
- P7. Feel guilty for not accomplishing the set target/performance

Other Organizational Factors

Perceived availability of resources

The responses for the following items are aggregated and divided by the total number of items and multiplied by 100 to get a percentile score

Perceived availability of resources Definition **-**The extent to which people perceive that the department provides training, registers, reporting forms to carry out HMIS tasks and feedback to improve performance. (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

- P12. Are given appropriate training For HMIS activities
- P13. Have the required forms and instruction guides for HMIS activities
- P14. Facilities receive timely monthly feedback on their submitted report

Supportive management

The responses for the following items are aggregated and divided by the total number of items and multiplied by 100 to get a percentile score.

Supportive management Definition **-**The extent to which management provide support by letting people express their opinions, resolves conflicts, helping work together, and dealing with clients' needs. (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

♦ *In health department, superiors*

- S1. Promote team work
- S4. Are open to alternative views
- S5. Listen to employees' ideas and concerns
- S6. Allow disagreements before reaching a decision
- S7. Are concerned about serving target community/clients needs

Knowledge of Performance Criteria

Scoring: The correct answer gets a score of 1, else 0. The responses of the following three questions are added and divided by the total number of items and multiplied by 100 to get a percentile score.

Knowledge of performance criteria

- A1.Are you told about your annual performance criteria? (Y/N)
- If yes, do these criteria include objective assessment of?
- A2. Change in knowledge, practices of mothers, service coverage such as immunization, ANC, growth monitoring etc. (Y/N)
- A3. Better quality of care such as better assessment of severity of pneumonia, diarrhea, etc. (Y/N)

Merit Criteria for Promotion

Scoring: The responses of the following two questions are added and divided by the total number of items and multiplied by 100 to get a percentile score.

Merit criteria for promotion

- P10. Management and staff feel that promotion is based on merit (Scale rating is from 1 to 7, from strongly disagree to strongly agree)
- A4. Transparent career advancement criteria exist (Y/N)

Reward System

Scoring: The responses of the question is divided by the 7, and multiplied by 100 to get a percentile score.

Definition: The possibility that good performance is recognized and reinforced by some kinds of reward. (Scale rating is from 1 to 7, from strongly disagree to strongly agree)

- P8. In health department, staff is rewarded for good work

Self-efficacy for HMIS Related Activities

Self-efficacy for HMIS related activities has six components. Each component has various indicators (Table 1). The respondents were asked to rate their self-efficacy of HMIS activities on a scale of zero to 100. All items belonging to use of data were added together, divided by total number of items, and then multiplied by 100 to get the percentile score. The score ranges between 0 and 100.

Self-efficacy (Scale rating is from 0 to 100, from no confidence to 100% confidence)

- SE1. I can fill out the facility monthly report correctly
- SE2. I can check data accuracy
- SE3. I can calculate percentage/rate correctly
- SE4. I can plot data by months or year
- SE5. I can compute trend from bar chart data use
- SE6. I can use data for identifying gaps
- SE7. I can use data for setting targets
- SE8. I can use data for preparing feedback report

Motivation

The ratings are reversed for BC1, BC2 and BC5 as the items are negatively worded (see below). The responses for items are aggregated and divided by the total number of items and multiplied by 100 to get a percentile score. The items are described below.

Motivation (Scale rating are from 1 to 7, from strongly disagree to strongly agree)

- BC1. Collecting information, which is not used for decision-making, discourage me (Reverse rating)
- BC2. Collecting information make me feel bored (Reverse rating)
- BC3. Collecting information is a meaningful work for me
- BC4. Collecting information give me the feeling that data is needed for monitoring facility performance
- BC5. Collecting information give me the feeling that it is forced on me (Reverse rating)
- BC6. Collecting information is appreciated by Co-workers and superiors

Appendix B:

Formula for Indicators Calculation

Table 1.1: Diagnostic Tool –Summary of Data Quality Indicators					
Dimensions/indicators	**Variable name**	**Calculation**	**Mean**	**Median**	**Min-Max**
Data quality					
% of completeness by data ele-	FQ7,FQ8	FQ8/FQ7*100	50	50	0-100
% of facility coverage (completeness) by district % of district having records of sub-	DQ3,4a,b DQ9	DQ4a/DQ3*100; DQ4b/ DQ3*100 Frequency DQ9	50	50	0-100
% of timeliness by district by months	DQ7a,b, DQ4	DQ7a1/DQ4a*100;	50	50	0-100
% of data accuracy of specific data element by month Data accuracy level for A month A Data accuracy level for A month B Data accuracy level for B month A Data accuracy level for B month B Data accuracy level for C month A Data accuracy level for C month B Data accuracy level for D month A Data accuracy level for D month B % of data accuracy of specific data element by month at district	FQ4a,b,c,d DQd10a,b,c	Facility FQ4Aa2]/[FQ4Aa1]*100 FQ4Ab2]/[FQ4Ab1]*100 FQ4Ba2]/[FQ4Ba1]*100 FQ4Bb2]/[FQ4Bb1]*100 FQ4Ca2]/[FQ4Ca1]*100 FQ4Cb2]/[FQ4Cb1]*100 FQ4Da2]/[FQ4Da1]*100 FQ4Db2]/[FQ4Db1]*100 District DQ10Aa2]/[DQ10Aa1]*100 DQ10Ab2]/[DQ10Ab1*100 DQ10Ba2]/[DQ10Ba1]*100 DQ10Bb2]/[DQ10Bb1]*100 DQ10Ca2]/[DQ10Ca1]*100	50	50	0-100
% of overall data accuracy by district		Aggregate all data elements and create a mean	50	50	0-100

Table 1.2: Diagnostic Tool –Summary of Use of Information Indicators					
Use of Information	**Variable name**	**Calculation**	**Mean**	**Median**	**Min-Max**
% of actual vs planned reports produced by district % of actual vs planned reports produced by facilities	DU3a2-e2, DU3a3-e3 FU3a2-d2, FU3a3-d3	[DU3A3]/[DU3A2]*100; [DU3B3]/[DU3B2] *100 [DU3C3]/[DU3C2] *100 ; [DU3d3]/[DU3d2] *100 [DU3e3]/[DU3e2]*100 [FU3A3]/[FU3A2]*100; [FU3B3]/[FU3B2]*100 [FU3C3]/[FU3C2]*100;	50	50	0-100
% facilities/district displaying use	FU5a3-d3	Frequency			
% of facilities/district having reports showing decisions by types of analyses	FU9a-d DU9a-d	(FQ9a+FQ9b+FQ9c+FQ9d)/ 4*100 ([DU9A]+[DU9B]+[DU9C]+ [DU9D])/4*100	50	50	0-100
% of facilities/districts reporting meetings with discussion on RHIS data	FU14a-b	(FQ14a+FQ14b)/2*100 ([DU14A]+[DU14B])/2*100	50	50	0-100
% of facilities/districts reporting decisions based on RHIS informa-	FU14c-d DU14c-d	(FQ14c+FQ14d)/2*100 ([DU14C]+[DU14D])/2*100	50	50	0-100
% of facilities reporting referral of problem for actions based on RHIS information	FU14e	Frequency			
% of activities related to promoting use of RHIS information at facility/district level	FU15,16,17,18 DU15,16,17,18	([FU15]+[FU16]+[FU17]+ [FU18])/4*100 ([DU15]+[DU16]+[DU17]+ [DU18])/4*100	50	50	0-100
% of example of information use	FU20	Frequency			

Table 1.3: Diagnostic Tool –Summary of RHIS Processes Indicators					
RHIS Processes	**Variable name**	**Calculation**	**Mean**	**Me-dian**	**Min-Max**
% of facilities reporting presence of data	FQ15	Frequency	50	50	0-100
% of facilities reporting presence of Data	FQ5c&6c	(FQ5c+FQ6c)/2*100	50	50	0-100
% of facilities reporting presence of data	FQ5a&-6a	(FQ5a+FQ6a)/2*100	50	50	0-100
% of facilities reporting presence of data	FQ5b& 6b	(FQ5b+FQ6b)/2*100	50	50	0-100
% of facilities reporting presence of data processing process % of districts reporting presence of data	FQ9 DQ11	Frequency Tabulation of Yes re-sponses			
% of facilities showing display of demo-	FU6,7	Frequency			
% of districts displaying of data related to mother health % of facilities displaying of data related to mother health	DU5a FU5a	if(([DU5A21]+[DU5A22]+[DU5A23])>1,'True','False') if(([FU5A21]+[FU5A22]+			
% of districts displaying of data related to child health % of facilities displaying of data related to	DU5b FU5b	if(([DU5B21]+[DU5B22]+[DU5B23])>1,'True','False') if(([FU5B21]+[FU5B22]+[FU5B23])			
% of districts displaying of data related to facility utilization % of facilities displaying of data related to	DU5c FU5c	if(([DU5C21]+[DU5C22]+[DU5C23])>1,'True','False') if(([FU5C21]+[FU5C22]+[FU5C23])			
% of districts displaying of data related to disease surveillance % of facilities displaying of data related to	DU5d FU5d	if(([DU5D21]+[DU5D22]+[DU5D23])>1,'True','False') if(([FU5D21]+[FU5D22]+			
% of districts reporting presence of feed-back process % of facilities reporting presence of feed-	DU4 FU4	Frequency			

Table 1.4: Diagnostic Tool –Summary of Technical Determinants Indicators					
Technical determinants	**Variable name**	**Calculation**	**Mean**	**Median**	**Min-Max**
% of districts reporting types of analyses % of facilities reporting types of analyses % of facilities reporting presence of procedure manual	DQ12a,b,c,d,e,f FQ10a,b,c,d FQ11	Frequency			
% of district respondents reporting about that RHIS procedure manual and forms,	DQ13,14,15,16,17,18,19,20	Frequency			

Table 1.5: Diagnostic Tool –Summary of Supervision Indicators					
RHIS Supervision Quality	**Variable name**	**Calculation**	**Mean**	**Median**	**Min-Max**
% of facilities reporting frequency of su-	FU21	Frequency			
% of facilities reporting quality of RHIS supervision	FU22-26	Frequency (FU22+FU23+FU24+FU25+FU26)/5*100	50	50	0-100

Table 1.6: Management Assessment Tool					
Dimensions/indicators	**Variables Items names**	**Indicator Calculation**	**Mean**	**Median**	**Min-Max**
RHIS Governance	MATG1-MATG4	([MATG1]+[MATG2]+[MATG3]+[MATG4])/4*100 – for district ([MATG1]+[MATG3])/2*100 – for facility	50	50	0-100
Planning	MATP1-MATP3	([MATP1]+[MATP2]+[MATP3])/3*100	50	50	0-100
Training	MATT1-MATT3	([MATT1]+[MATT2]+[MATT3])/4*100	50	50	0-100
Supervision	MATS1-MATS3	([MATS1]+[MATS2]+[MATS3])/3*100	50	50	0-100
Use of quality/ Performance standard	MATQ1-MATQ3	([MATQ1]+[MATQ2]+[MATQ3])/3*100	50	50	0-100
Finances	MATF1-MATF4	([MATF1]+[MATF2]+[MATF3]+[MATF4])/4*100 ([MATF1]+[MATF3])/2*100– for facility	50	50	0-100

Table 1.7: Organizational and Behavioral Assessment Tools indicators and scoring					
Indicators	**Variables**	**Calculation**	**Mean**	**Median**	**Min-Max**
A. Behavioral					
1. RHIS tasks competence			50	50	0-100
a. Knowledge of methods of checking data quality	U2	[U2]/3*100	50	50	0-100
b. Calculating indicators	C1,2,3,	([C1]+[C3]+[C4])/3*100	50	50	0-100
c. Plot data	C2a	[C2A]*100	50	50	0-100
d. Interpret data	C2b,C2c	([C2B]+[C2C])/7*100	50	50	0-100
e. Use of information	UD1,2,3,4	([UD1]+[UD2]+[UD3]+[UD4])/4*100	50	50	0-100
2. RHIS task confidence		**Rating scale 0-100**	50	50	0-100
a. Checking data quality	SE1	SE1	50	50	0-100
b. Calculating indicators	SE2	SE2	50	50	0-100
c. Plot data	SE3	SE3	50	50	0-100
d. Interpret data	SE4,SE5	SE4+SE5/2	50	50	0-100
e. Use of information	SE6,SE7	SE6+SE7/2	50	50	0-100
3. RHIS data demand	U1A,U1B,U1C	([U1A]+[U1B]+[U1C])/3/3*100	50	50	0-100
4. Motivation	BC1,BC2,BC5,BC3,BC4,BC6	([bc1r*]+[bc2r*]+[bc5r*]+[BC3]+[BC4]+[BC6])/7/6*100	50	50	0-100
5. Problem-solving skill Defining problem Solving problem	Total PSA PSB	([PSA]+[PSB1])/11*100 ([PSA]*100 ([PSB1])/11*100	50	50	0-100
*the item rating has been reversed due to the negative statement					

Table 1.8: Organizational and Behavioral Assessment Tools indicators and scoring					
Indicators	**Variables**	**Calculation**	**Mean**	**Median**	**Min-Max**
B. Organizational		**Percentile scale 0-100**	50	50	0-100
1. Culture of information			50	50	0-100
Emphasis on data quality	S2, S6,S8	([S2]+[S6]+[S8])/7/3*100	50	50	0-100
Use of information	S5,P8,P9,P16	([S5]+[P8]+[P9]+ [P16])/7/4*100	50	50	0-100
Evidence based decision making	D1,D2,D3,D4, D5,D6,D7	([D1r]*+ [D2r*]+ D3]+ [D4r*]+[D5]+[P6]+[D6]+ [D7])/7/7*100	50	50	0-100
Feedback from staff and community	S1,S3,S4,S7	([S1]+[S3]+[S4]+ [S7])/7/4*100	50	50	0-100
Sense of responsibility	P1,P3,P4,P5,P 17	([P1]+[P3]+[P4]+[P5]+ [P17])/7/5*100	50	50	0-100
Empowerment and Accountability	P2,P13,P14,P1 5	([P2]+[P13]+[P14]+ [P15])/7/4*100	50	50	0-100
Promote problem-solving	P9,P10,P11,P1 2	([P9]+[P10]+[P11]+ [P12])/7/4*100			
Department provide reward for	P6	[P6]/7*100	50	50	100
Training	DD6	Frequency			
Socio-demographic characteristics	DD1,2,3,4,5,	Frequency			
*the item rating has been reversed due to the negative statement