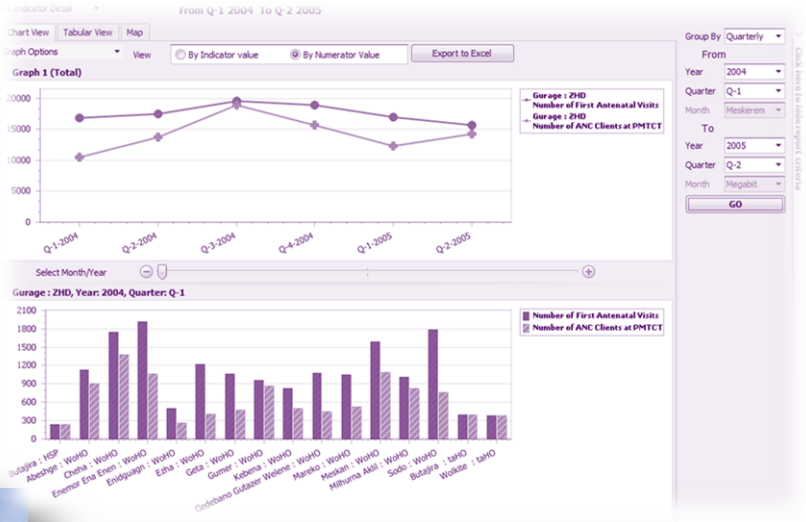
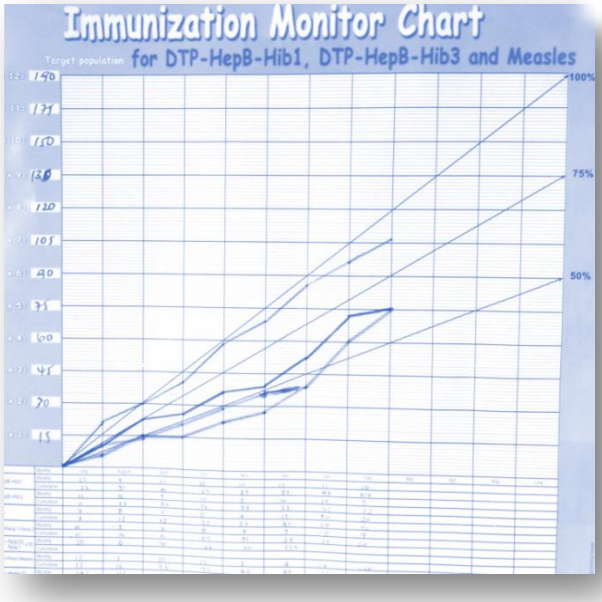
HMIS Information Use Guide

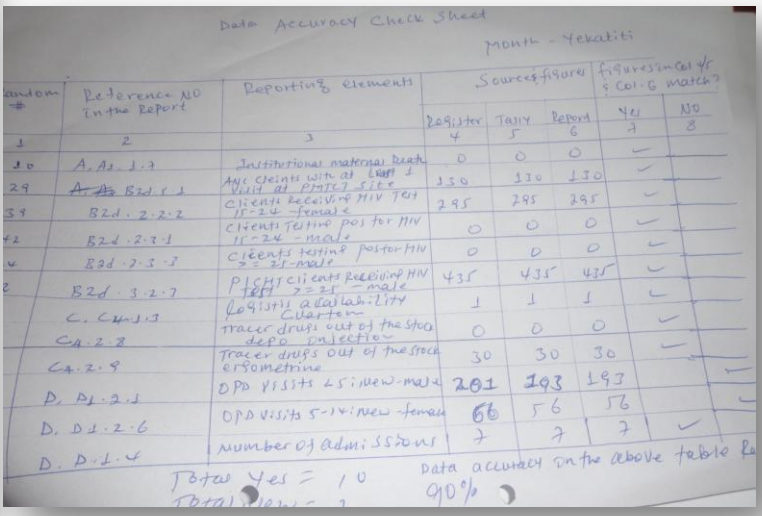
Technical Standards Area 4: Version 2

Ministry of Health
Federal Democratic
Republic of Ethiopia

May 2013







KEYS TO SUCCESS

EXPECT MORE THAN OTHERS THINK IS POSSIBLE

DREAM MORE THAN OTHERS THINK IS PRACTICAL

RISK MORE THAN OTHERS THINK IS SAFE

H.E. DR TEDROS ADHANOM - FOREIGN MINISTER OF ETHIOPIA
(FORMER MINISTER OF HEALTH)

"....health information is much more than collecting figures. Data have no value in themselves; value and relevance come after data management and analysis – the process whereby data are transformed into information and knowledge for action."

H.E. DR KESETEBIRHAN ADMASU – MINISTER, FEDERAL MINISTRY OF HEALTH, ETHIOPIA

Contents

Foreword v

1. Introduction 1

2. The Purpose of HMIS 1

3. HMIS Indicators 2

4. HMIS reports 3

5. Relationship of HMIS indicators with Health Programs and Health System M&E 3

The Maternal Survival Strategy and HMIS indicators 3

Child Mortality and Child Survival Interventions 6

STOP TB Program 8

6. HMIS Data Quality Assurance 9

Procedures for HMIS DQA 11

7. HMIS Data analysis and interpretation 16

HMIS key indicators 16

Hospital Key Performance Indicators (KPI) and HMIS 18

Indicator specific analysis and interpretation 18

8. Forums for HMIS Data Use 19

Woreda based planning 19

Monthly Performance Review Meetings 20

9. Performance Review Meeting Procedure - Using HMIS data for Performance Monitoring and Improvement 22

Tools to assist in decision making 24

10. Guidelines on data display 25

11. Using evidences from other information sources 26

12. Communicating evidence based sector plans & performance reports to local Cabinet/Council 27

Objectives of the communication to respective cabinet and council 27

13. Annexes 28

Annex 1: List of HMIS Indicators: Current (2010-12) 28

Annex 2: List of Indicators for the strategic and annual plans 32

Annex 3: HSDP Core Performance Indicators and Targets[12] 39

Annex 4: How to prepare the charts for monitoring achieved and planned immunization and reproductive health coverage 40

Annex 5: Monthly Immunization Coverage Monitoring Charts 42
Annex 6: Monthly Reproductive Health Coverage Monitoring Chart 43
Annex 7: Making and using charts to compare current year with previous years 44
Annex 8: Data Display Formats at Health Posts 45
Annex 9: Fishbone Diagram of Possible Root Causes of Why Children with Malaria not Improving[18] 47
Annex 10: A (Problem) Tree Diagram[18] 47
1. Family Planning Register for Health Centers & Hospitals 49
2. Integrated Antenatal, Labor, Delivery, Newborn and Postnatal Card & the Antenatal Care, Delivery and Postnatal Care Registers 49
Integrated Antenatal, Labor, Delivery, Newborn and Postnatal Card (for Hospitals and Health Centers) 49
The Antenatal Care Register, the Delivery Care Register and the Postnatal Care Register (for Hospitals and Health Centers) 51

List of Figures

Figure 1: Conceptual Framework-health systems building blocks. 1
Figure 2: Maternal Survival Strategies 5
Figure 3: Under-five causes of deaths and mortality rate 6
Figure 4: Child survival interventions with sufficient or limited evidence of effect on reducing mortality from the major causes of under-5 deaths 7
Figure 5: Routine Monitoring data on TB program captured through HMIS 8
Figure 6: Data managements and reporting systems, functional levels and data quality 9
Figure 7: The Planning & Performance Monitoring Flow 20
Figure 8: The Performance Improvement Framework 22
Figure 9: Target Setting – Example 1: setting targets based on epidemiological situation, including size estimates of population sub-groups considered to be most at risk. 23
Figure 10: Target Setting – Example 2: setting targets based on program's "added value" 23
Figure 11: Tips to facilitate root cause analysis and solution 25

List of Tables

Table 1: HMIS Monthly Reporting Timeline.....10
Table 2: Example of a filled Monthly HMIS Report Data Accuracy Check Sheet.....12
Table 3: LQAS Decision Rule Table 13
Table 4: RQDA Table (Verification Factor for Health Facilities Assessed).....15
Table 5: Key HMIS Indicators 16
Table 6: Minimum Display Charts to Be Maintained by Health Institutions 26

Acronyms

ANC	Antenatal Care
ARM	Annual Review Meeting
ART	Antiretroviral Therapy
BPR	Business Process Reengineering
CSA	Central Statistical Authority
DPT	Diphtheria, Pertussis and Tetanus
DQA	Data Quality Assessment
EPI	Expanded Program on Immunization
FMOH	Federal Ministry of Health
GTP	Growth and Transformation Plan
HC	Health Center
HEW	Health Extension Worker
HF	Health Facility
HI	Health Institution
HMIS	Health Management Information System
HP	Health Post
HRIS	Human Resource Information System
HSDP	Health Sector Development Program
HSEP	Health Sector Extension Program
IDSR	Integrated Disease Surveillance and Response
IRS	Indoor Residual Spraying
IRT	Integrated Refresher Training
KPI	Key Performance Indicator
LLIN	Long-lasting insecticidal nets
LMIS	Logistic Management Information System
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
OPD	Out Patient Department
PHCU	Primary Health Care Unit
PIHCT	Provider-Initiated HIV Counseling and Testing
PLHIV	People Living with HIV / AIDS
PMTCT	Prevention of Mother to Child Transmission
PRT	Performance Review Team
RDQA	Routine Data Quality Assessment
RHB	Regional Health Bureau
TB	Tuberculosis
TB-DOTS	Tuberculosis - Directly Observed Treatment Short-course
TT	Tetanus Toxoid
VCT	Voluntary Counseling and Testing
VF	Verification Factor
WorHO	Woreda Health Office
ZHD	Zonal Health Department

Foreword

The Health Management Information System (HMIS) in Ethiopia is designed to capture and provide essential core data for planning and monitoring health system's performance. With the view to enhance the use of HMIS information for planning and management purposes at each level of the health system, this guide on HMIS information use by the Regional Health Bureaus (RHB), Zonal Health Departments (ZHD), Woreda Health Offices (WorHO) and Primary Health Care Units (PHCU) is produced.

This version of the HMIS Information Use guidelines is the latest version of the HMIS/M&E Redesign Technical Standards Area 4 (May 2007) that was redesigned based on the three overarching principles of HMIS redesign – i.e. Standardization, Integration and Simplification. In that version, guidelines for self-assessment by individual and health institutions, as well as externally assisted performance monitoring, dissemination and visual presentation of information were laid down. The current guide attempts to fit in the HMIS information use in the bigger picture of health system by linking it to the various program frameworks and to the overall planning and monitoring processes already existing in the country. It also takes account of the recent changes in how the health system in Ethiopia is organized, especially the establishment of Primary Health Care Units (PHCU), and the reporting needs to the councils/cabinets at every administrative level.

Thus, the flow of this guide has been arranged to familiarize the target audience, in this case the health managers at regional, zonal, woreda and PHCU levels, first with the HMIS indicators and how they relate to different program frameworks. Maternal Survival Strategies, Child Survival Interventions, Community Based Case Management Matrix and TB-DOTS program have been used to illustrate the relationship of relevant HMIS indicators with the respective program / health services framework. The idea is to broaden the sphere of thinking from indicator-based monitoring to a more holistic health system based planning and monitoring approach. Thus, for example, through this guide one is encouraged to consider the whole set of available HMIS indicators that pertain to maternal survival strategies rather than discretely focusing on single or a group of indicators like antenatal coverage and/or skilled birth coverage.

Before moving on to how to analyze the HMIS data, this guide puts procedures to assure data quality. The guide then makes use of the existing mechanisms of national level strategic planning for the health sector, i.e. 5-year Health Sector Development Plan (HSDP) and the Woreda-based Annual Health Sector Planning as the continuum in the See-Do-Plan cycle of performance management. Regarding the membership of performance review meetings, the participation of all stakeholders is duly emphasized.

This guide encourages display of data according to the identified priorities to facilitate bold display of progress made and to act as a constant reminder in case of faltering performance. Use of other data sources is also promoted that can help in complementing or supplementing the information available from HMIS for more in-depth understanding of the problem area initially identified through HMIS.

We are indeed grateful to all our partners for their assistance in the development of this guideline. We believe that this information use guidelines will make a significant contribution in making evidence based decision for improving the health service delivery and thereby improving the health status of our community. Therefore, I am calling on all health workers, program managers, process owners and other stakeholders to comply with this guideline.

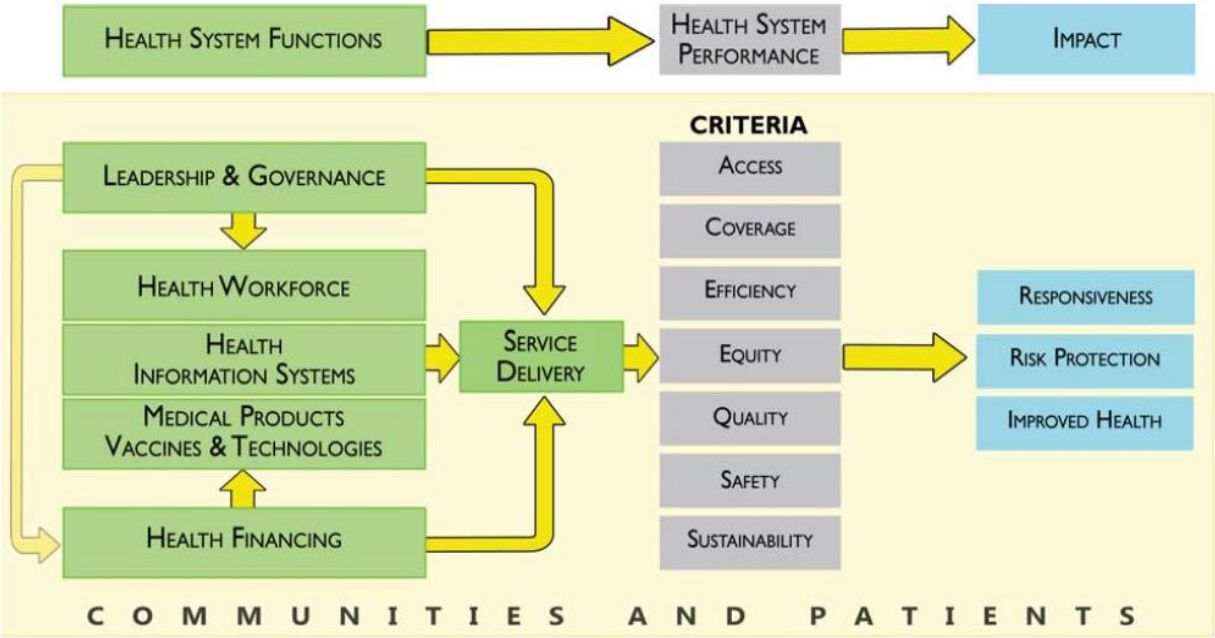
.

Amir Aman Hagos (Dr.)
State Minister of Health

1. Introduction

Health Information system is one of the six building blocks of a health system. A well-functioning health information system supports the delivery of health services by ensuring the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status[1]. Fig. 1 below provides a conceptual framework of the relationship of improved health information with other health systems building blocks.

Figure 1: Conceptual Framework-health systems building blocks[2].



WHO emphasizes on technical and political knowledge and action for strengthening Health Information System. In Ethiopia, the Ministry of Health (MOH) puts utmost importance to strengthening the Health Information System (HIS) of which the routine Health Management Information System (HMIS) is an integral part. The government has adopted a "One plan, one budget and one report" policy making HMIS as the core information system providing the essential information for health system monitoring. In its five-yearly strategic plans – the Health Sector Development Plans (HSDP), MOH duly recognized HMIS and M&E as the backbone of effective health care delivery in Ethiopia[3].

2. The Purpose of HMIS

The purpose of HMIS is to routinely generate quality health information that provides specific information support to the decision-making process at each level of the health system for improving the performance of health services

[1] Everybody business: strengthening health systems to improve health outcomes: WHO's framework for action. World Health Organization 2007; ISBN 978 92 4 159607 7

[2] USAID Health Systems 20/20: A Health Systems Assessment Approach: A How-to Manual. Version 2

[3] Government of Ethiopia Federal Ministry of Health, HMIS Reform Team: Health Management Information System / Monitoring & Evaluation Strategic Plan for Ethiopian Health Sector. January 2008

delivery. HMIS is not only meant as a system for data collection and generating quality information, but continued use of that information for decision making for improving the performance of health services delivery is an essential output of HMIS.

Thus, the main objective of the HMIS/M&E Core process under the Business Process Reengineering (BPR) is to support and strengthen local action-oriented performance monitoring through addressing five strategic issues critical to strengthening and continuously improving HMIS[3]. Accordingly, the HMIS in Ethiopia has been standardized and integrated to report on 108 indicators and capture disease specific data from all the health facilities, i.e. hospitals, health centers and health posts – both public and private.

3. HMIS Indicators

An indicator is a variable that measures one aspect of a program or project that is directly related to the program's objectives[4].

Indicators measure the value of the change of a single aspect of a program or project - an input, an output or an overarching objective, in meaningful units that can be compared to past and future units.

The HMIS indicators have been selected as the most important tools for monitoring health system and program performance. Broadly, the HMIS indicators are grouped into the following thematic/programmatic areas:

- Family Health (21 indicators)
    - Reproductive Health (12 indicators)
    - Child Health (3 indicators)
    - Expanded Program on Immunization (EPI) (6 indicators)
- Disease Prevention and Control (47 indicators)
    - All Diseases (5 indicators)
    - Communicable Diseases (39 indicators)
        - Malaria (4 indicators)
        - TB and Leprosy (10 indicators)
        - TB/HIV co-infection (2 indicators)
        - HIV/AIDS (17 indicators)
        - Other Communicable Diseases (6 indicators)
    - Non-communicable Diseases (1 indicators)
- Hygiene and Environmental Sanitation (2 indicators)
- Resources (28 indicators)
    - Assets (7 indicators)
    - Finance (9 indicators)
    - Human Resources (4 indicators)
    - Logistics (2 indicators)
    - Laboratory and Blood Bank (6 indicators)
- Health Systems (12 indicators)
    - Health Service Coverage and Utilization (8 indicators)
    - Management (2 indicators)

[4] MEASURE Evaluation M&E Course

- HMIS and M&E (2 indicators)

Detail list of HMIS indicators, both current and proposed modifications are in Annex 1.

4. HMIS reports

The HMIS is designed to generate:

- Monthly reports
- Quarterly reports
- Yearly reports, and
- Weekly IDSR reports

The Monthly reports submitted by the health facilities are submitted to the Woreda Health Offices who prepare aggregated monthly reports and submit to the woreda council and to zonal health departments. Similarly, the ZHDs and RHB produce monthly aggregate reports and submit them to their respective councils and to RHB or FMOH respectively. The electronic HMIS implemented in many woredas/regions enable automated aggregation of the monthly data over time and allow access to and presentation of disaggregated and aggregated HMIS data.

5. Relationship of HMIS indicators with Health Programs and Health System M&E

The HMIS indicators have been carefully selected to meet the key information needs of monitoring the performance of various health programs and services and provide a snapshot of the available health resources. The disease data provide the status report on communicable and non-communicable diseases. The following sections illustrate the relationship of HMIS information and some of the health programs. The purpose of these illustrations is to provide an in-depth understanding of how HMIS can be used for monitoring program performance and encourages similar in-depth analysis for all health programs and services.

The Maternal Survival Strategy and HMIS indicators

The Maternal Survival Strategies lays down a framework for achieving the fifth Millennium Development Goal of reducing maternal mortality. Given the complexity of the country contexts and the determinants of maternal health, none of the maternal survival intervention alone can reduce the maternal mortality rate. Rather, evidences support packaging of health facility oriented interventions is highly effective and has high coverage of the intended target group[5].

In this context, in order to routinely monitor the progress towards implementation of a highly effective package of maternal survival interventions, the HMIS is designed to provide albeit some of the core input, process and output indicators.

HMIS indicators related to pregnancy care interventions are:

- 1st antenatal care attendances
- 4th antenatal care attendances

[5] Dr Oona MR Campbell PhD, Prof Wendy J Graham Dphil on behalf of The Lancet Maternal Survival Series steering group. **Strategies for reducing maternal mortality: getting on with what works**. The Lancet, Volume 368, Issue 9543, Pages 1284 - 1299, 7 October 2006, Published Online: 28 September 2006

- Cases of abnormal pregnancies attended at out-patient departments (OPD) of health facilities
- Institutional cases of maternal morbidity and mortality due to Antepartum hemorrhage (APH), hypertension and edema reported by In-patient departments (IPD) of health facilities
- Cases of abortion attended at health facilities
- Cases of medical (safe) abortions conducted at health facilities

HMIS indicators related to intra-partum care:

- Deliveries by skilled attendance (at health facilities)
- Deliveries by Health Extension Workers (HEW) (at home of Health Posts)
- Institutional cases of maternal morbidity and mortality due to Obstructed labor

HMIS indicators related to post-partum care:

- 1st postnatal care attendance
- Institutional cases of maternal morbidity and mortality due to Postpartum hemorrhage (PPH) and Puerperal sepsis

HMIS indicators related to inter-partum (between pregnancies) period

- Family planning method acceptors (New and Repeat)
- Family planning methods issued by type of method

Though not a complete set to monitor every facet of maternal survival strategies, these HMIS indicators duly capture data related to pregnancy, intra-partum and postpartum care, sufficient to give a broad indication of the ongoing performance of the package of maternal survival interventions, and having the ability to instigate further investigation if problems/issues are identified using these HMIS indicators.

The following illustration relates the HMIS indicators with the Maternal Survival Strategies[5] framework published in the Lancet. The HMIS indicators related to specific sub-strategies are shown in green shaded boxes.

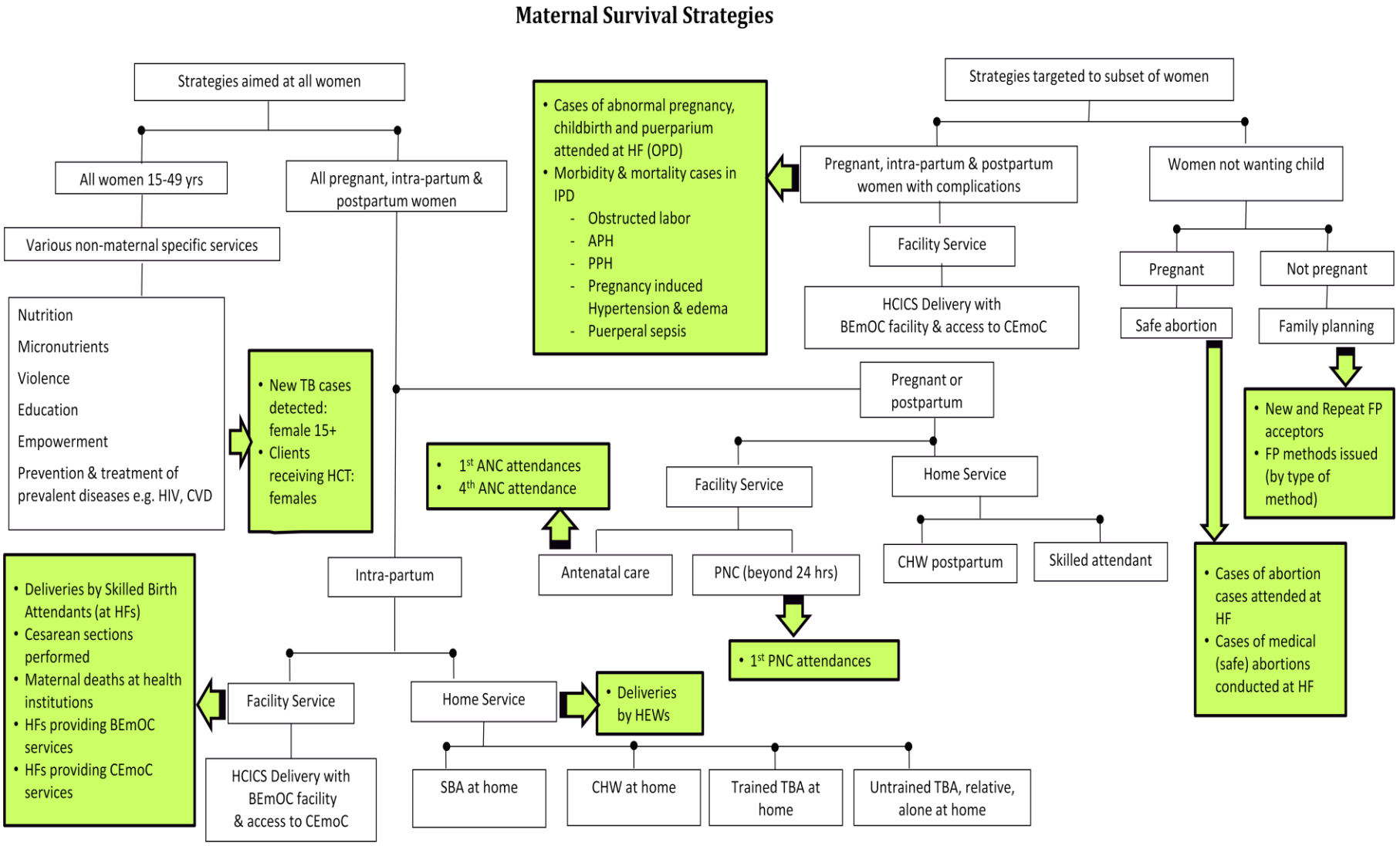


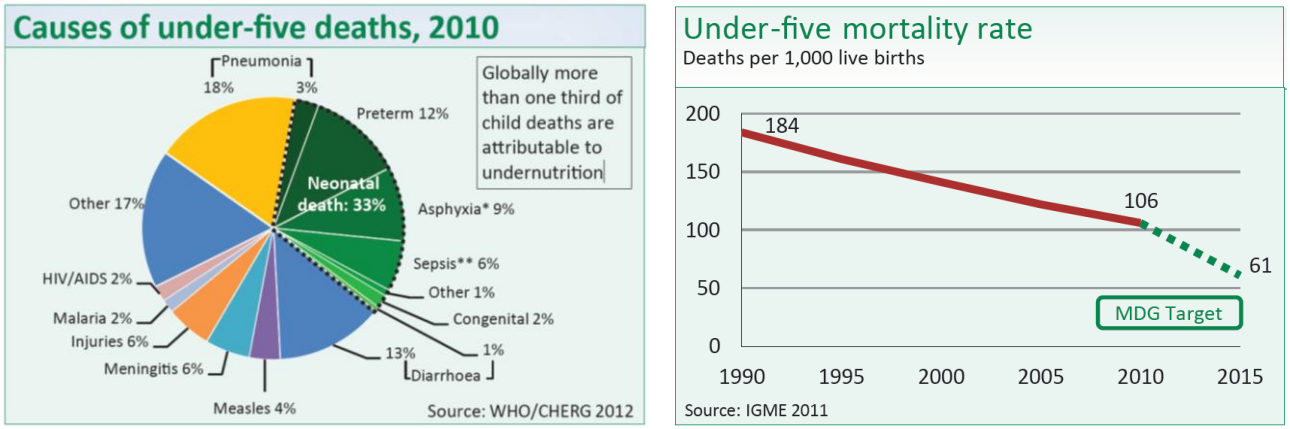
Figure 2: Maternal Survival Strategies

Child Mortality and Child Survival Interventions

Ethiopia is one of those countries who have made great strides towards reducing the under-5 mortality. However, under-5 mortality still remains high at 106 per 1000 live births (LB) in 2010 and the country faces the challenge of reducing it to 61/1000 LB by 2015[6]. The EDHS 2011 estimated under-5 mortality to be 88 per 1000 LB that is a 47% decline from 166/1000 LB in 2000.

Diarrhea, pneumonia, measles, malaria, HIV/AIDS, birth asphyxia, preterm delivery, neonatal tetanus and neonatal sepsis are the major causes of under-5 deaths in Ethiopia, with under-nutrition attributing to over one third of these deaths.

Figure 3: Under-five causes of deaths and mortality rate



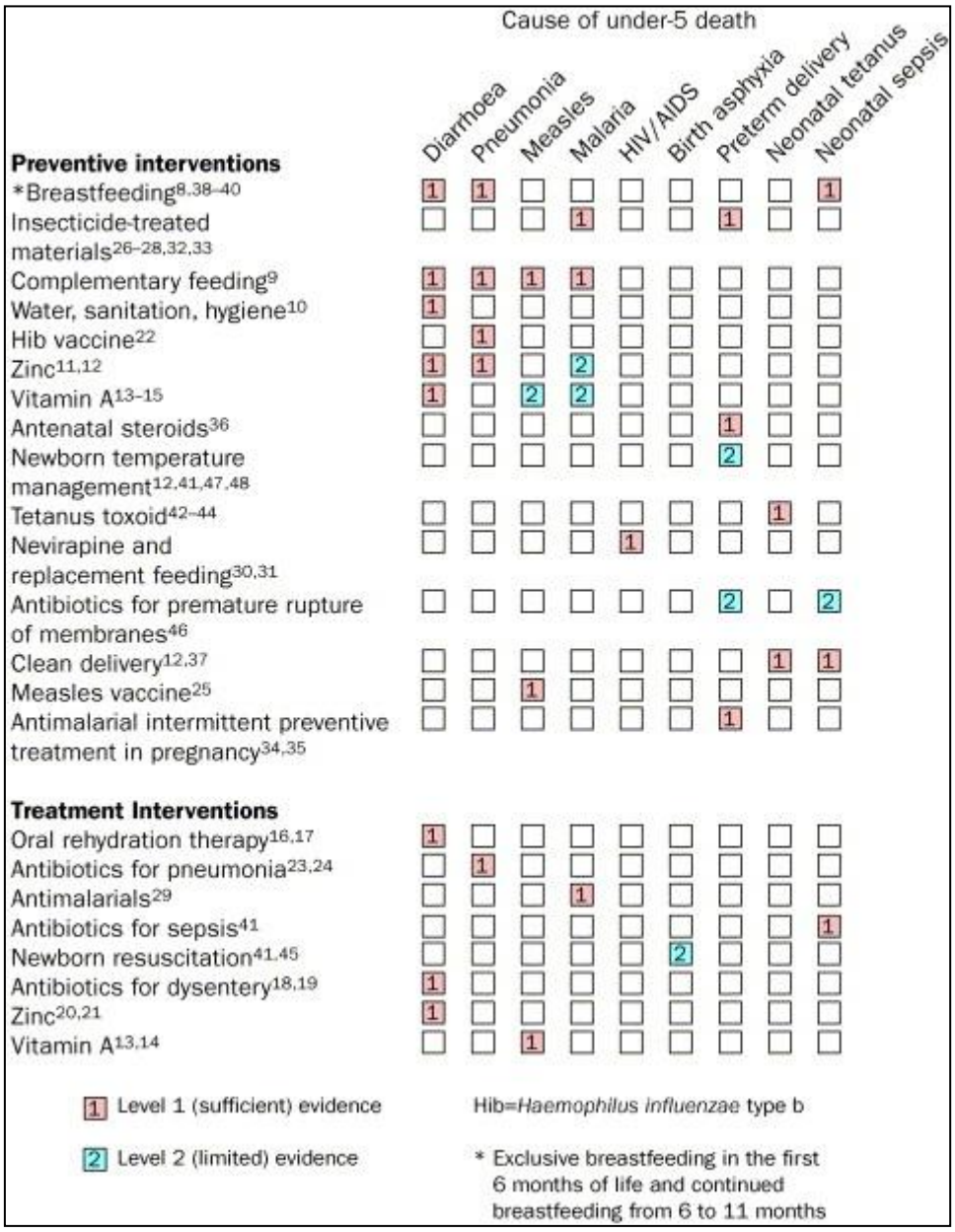
Interventions addressing the more proximal determinants of child mortality and those that can be delivered mainly through the health sector are shown in Fig. 2[7].

Ethiopia is implementing interventions targeting under-5 year old children through Universal Immunization Coverage, nutrition program, Integrated Management of Childhood Illnesses and the Community Case Management of Childhood Illnesses and indirectly through Health development Army to improve water, sanitation and hygiene and malaria prevention through Environmental Management, Integrated Household Spraying and distribution of Insecticide Treated Nets (ITN).

[6] Countdown to 2015: Maternal, Newborn and Child Survival. Ethiopia Maternal and Child Health Data http://www.countdown2015mnch.org/documents/2012Report/2012/2012_Ethiopia.pdf

[7] Dr Gareth Jones PhD, Richard W Steketee MD, Prof Robert E Black MD, Prof Zulfiqar A Bhutta PhD, Saul S Morris PhD, The Bellagio Child Survival Study Group. **How many child deaths can we prevent this year?** The Lancet, Volume 362, Issue 9377, Pages 65 - 71, 5 July 2003 (doi:10.1016/S0140-6736(03)13811-1)

Figure 4: Child survival interventions with sufficient or limited evidence of effect on reducing mortality from the major causes of under-5 deaths



In the context of the above these child survival interventions, the related HMIS indicators are:

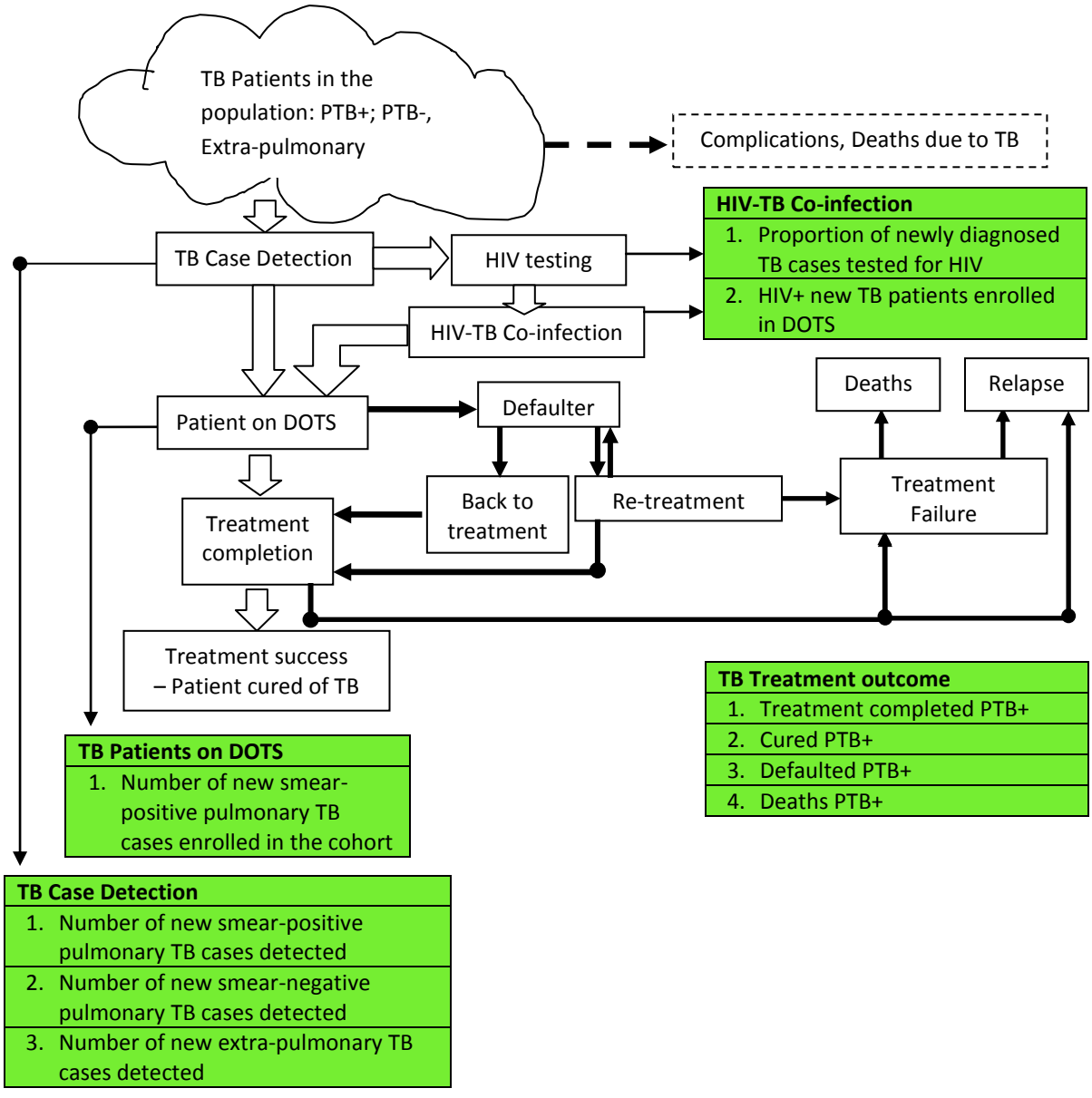
- Number of treatments for children under five provided by health facility by disease
  - Diarrhea, dysentery, pneumonia, measles, malaria, neonatal tetanus
- Number of infants immunized for measles
- Latrine coverage
- Safe water coverage
- Household with ITN (this data is not directly reported through HMIS, but the data is captured on Family Folders by the HEWs who also prepare a village profile containing this indicator)

STOP TB Program

With the vision to have a TB free world, the goal of the STOP TB Program (STP) is to dramatically reduce the global burden of TB by 2015 in line with the Millennium Development Goals and the Stop TB Partnership targets. One of the main objectives of the program is to achieve universal access to high-quality care (i.e. universal access to high quality diagnosis and patient centered treatment) for all people with TB (including those co-infected with HIV and those with drug-resistant TB)[8]. Thus, TB case detection and successful completion of the treatment/cure of the TB remains at the core of the Stop TB Strategy. Hence one of the targets linked to the MDGs and endorsed by the Stop TB Partnership is by 2050 to reduce prevalence and deaths due to TB by 50% compared with a baseline of 1990.

The following flow-chart puts the HMIS indicators (in green shaded boxes) in the context of the STOP TB Program.

Figure 5: Routine Monitoring data on TB program captured through HMIS

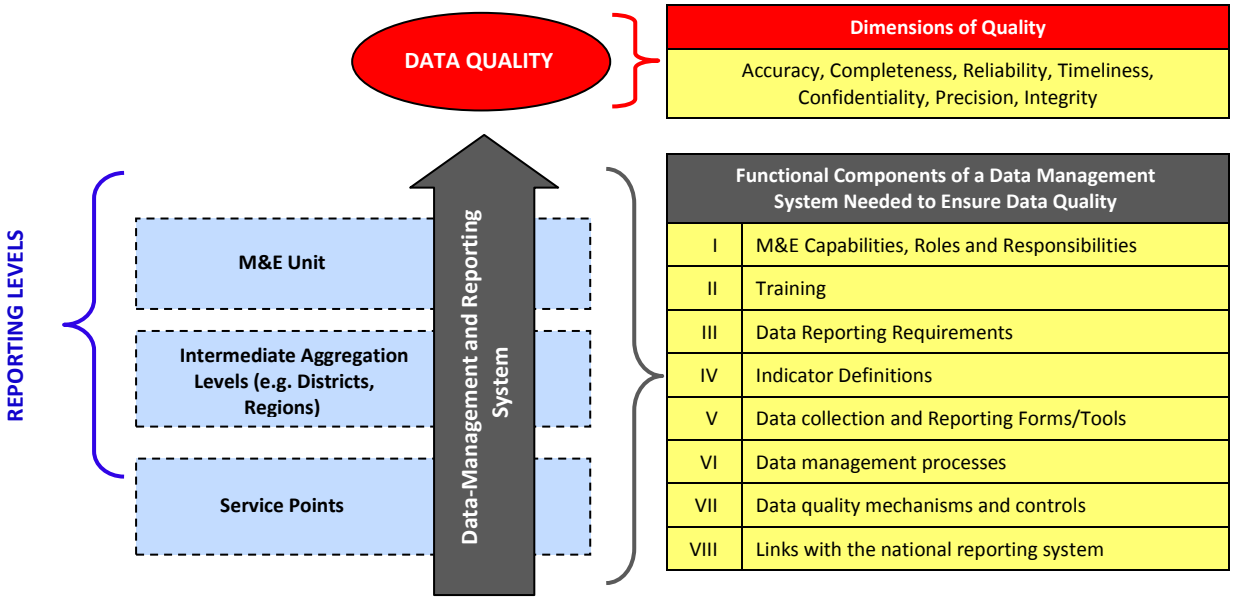


[8] World Health Organization (WHO): STOP TB Strategy WHO/HTM/TB/2006.368

6. HMIS Data Quality Assurance

Data quality is a prerequisite for ensuring HMIS information use. Timely, complete, credible, relevant, easily understandable and accurate data enhance the utilization of HMIS data by all the stakeholders. Therefore, the health management information system needs to be responsive to the demands of changing health service delivery and management. For quality data to be produced by and flow through a data management system, key functional components need to be in place at all levels of the system as illustrated in the figure below.

Figure 6: Data managements and reporting systems, functional levels and data quality[9]



Dimensions of Quality
Accuracy, Completeness, Reliability, Timeliness, Confidentiality, Precision, Integrity

Functional Components of a Data Management System Needed to Ensure Data Quality	
I	M&E Capabilities, Roles and Responsibilities
II	Training
III	Data Reporting Requirements
IV	Indicator Definitions
V	Data collection and Reporting Forms/Tools
VI	Data management processes
VII	Data quality mechanisms and controls
VIII	Links with the national reporting system

The following data quality dimensions are selected in HMIS.

Dimensions of data quality such as Integrity (The system used to generate data is protected from deliberate bias or manipulation), Precision (Data have sufficient detail for example sex, age disaggregation) and Reliability (Data generated by the information system are based on protocols and procedures that do not change according to who is using them and when or how often they are used. The data are reliable because they are measured and collected consistently) are mainly assured at the design phase of the health management information system. The FMOH has been further refining the data elements and the system to improve credibility and relevance of HMIS for routine monitoring of program performance. For example in the upcoming revised HMIS there will be introduction of data elements and indicators for new initiatives (such as PCV immunization) and sex desegregation of data to allow gender based analysis.

Dimensions such as confidentiality, timeliness, completeness and accuracy for data quality are assured at design and implementation phase.

[9] ROUTINE DATA QUALITY ASSESSMENT TOOL (RDQA) GUIDELINES FOR IMPLEMENTATION FOR HIV, TB & MALARIA PROGRAMS; The Global Fund to Fight Aids, Tuberculosis and Malaria; Office of the Global AIDS Coordinator, PEPFAR, USAID, WHO, UNAIDS, MEASURE Evaluation; July 30, 2008

Data Confidentiality

Confidentiality means that clients are assured that their data will be maintained according to national and/or international standards for data. This means that personal data are not disclosed inappropriately, and that data in hard copy and electronic form are treated with appropriate levels of security (e.g. clients should not take patient folder from medical record unit to professionals, each folder should return every day to medical record unit and kept client information in password protected files).

Completeness

Data completeness is defined differently according to the context.

At service delivery point – data completeness is that all the relevant data elements in a register of patient/client form are filled. This is content completeness. To persuade health professionals to fill data at primary source of recording and reporting administrative levels need to clearly show the relevance of each column and space to be filled in light of their contribution to assist diagnosis, treatment, and counseling, continuum of care, program improvement and resource allocation.

At Health Administrative unit – data completeness has two meanings:

- that all the data elements in a database or report are filled
- that the health administrative unit has reports from all the health facilities and/or lower level health administrative units within its administrative boundary

Timeliness

Timeliness reflects that data is collected, transmitted and processed according to the prescribed time and available for making timely decisions[10].

The timeline set by the Federal MOH for data transmission of monthly reports is as following:

Table 1: HMIS Monthly Reporting Timeline

From	To	Report arrival date at reporting destination
Health post	Health Centre (PHCU)	8th of month
Health center	WorHO	8th of month
District hospital	WorHO / ZHD	8th of month
Regional / referral hospital	RHB / FMOH	8th of month
WorHO	ZHD / RHB	15th of month
ZHD	RHB	21st of month
RHB	FMOH	28th of month

[10] A MANUAL FOR STRENGTHENING HMIS DATA QUALITY: Ministry of Health Republic of Uganda, USAID UPHOLD Project

Accuracy

The data that is compiled in databases and reporting forms is accurate and reflect no inconsistency between what is in registers and what is in databases/reporting forms at facility level. Similarly, when data entered in the computers, there is no inconsistency between reporting forms and computer file[10].

Procedures for HMIS DQA

It is the responsibility of each health administrative unit to assure HMIS data quality. The procedures for doing so are as following:

Report timeliness:

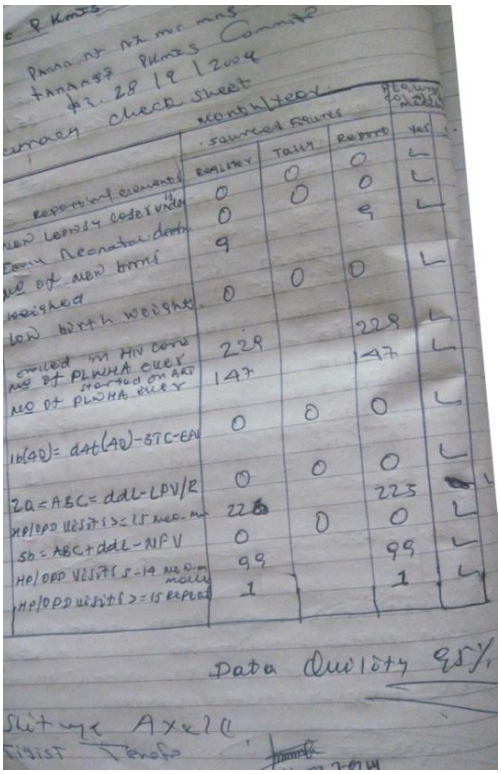
Report timeliness is measured as the reports that are received on time over the expected number of reports for an administrative unit.

At each administrative unit, the HMIS Focal Person will maintain a registry of receipt and transmission of the monthly report from and to the respective level/health unit. After the due date for receipt is over, the Focal Person will check the registry to identify those who have not submitted the report and communicate with them accordingly.

Report completeness:

In practical terms, reporting completeness is measured as the number of monthly/yearly reports received over the number of expected monthly/yearly reports for that administrative unit. Thus, as with report timeliness, the concerned HMIS Focal Person will review the report submission registry or the electronic report tracker module to know the number of health facilities that have reported and to identify the health facilities by name that have not submitted their report and take necessary actions accordingly.

The WorHO HMIS Focal Person will also check the monthly reports from all the health facilities for data completeness in each of the report.



Data accuracy: Self-assessment at Health Facility level

The Lot Quality Assessment Sampling (LQAS) method will be used to check data accuracy at Health Facility level. The Health Facilities will maintain a registry to record the data accuracy check results. The HMIS Focal Persons from WorHO, ZHD and RHB will use the LQAS method to check data accuracy during their supervisory visits.

The LQAS Method for HMIS Data Accuracy Check:

Step 1. Select the month for which you are doing the data accuracy check.

Step 2. Pre-fix the level of data accuracy that you are expecting, e.g. 70% or 85% etc.

Step 3. Put serial numbers against the data elements in the Service Delivery or Disease Report that you want to include in the data accuracy check

Step 4. Generate twelve random numbers using Excel program. These random numbers represent the serial numbers of the data elements included in the data accuracy check. Note them in Column of the Data Accuracy Check Sheet. This is to ensure representation of all data elements by giving equal chance to all data elements.

Step 5. List down the selected data elements from the report on to the Data Accuracy Check Sheet in Column 2 and Column 3

Step 6. Write down the reported figures from the Monthly HMIS Report for the selected data elements in the Column 4 of the Data Accuracy Check Sheet.

Note: In case of Health Post, figures for the selected data elements from the Tally Sheet will be compared with recounted figures from the Family Folders. Therefore, record the figures for the selected data elements from the Tally Sheet in Column 5.

Step 7. Recount the figure from the corresponding registers and note the figures on Column 6 of the LQAS check-sheet

Step 8. If the figures for a particular data element match or do not match put "yes" or "no" accordingly in Column 7 or Column 8 respectively.

Step 9. Count the total number of "yes" and "no" at the end of the table

Step 10. Match the total number of "yes" with the LQAS Decision Rule table and determine the level of data accuracy achieving the expected target or not.

Table 2: Example of a filled Monthly HMIS Report Data Accuracy Check Sheet

Random #	Reference No. in the Report	Reporting elements	Source & Figures			Do figures in Col. 4 or Col. 5 match with figures in Col 6?	
			Report	Tally	Register	Yes	No
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2	A1.2,1.2.1	New acceptors	8		12		✓
16	A2,2.2.1	Number of weights measured for children <3 years	10		10	✓	
21	A3,3.3	Measles immunizations for infant <1 yr of age	8		8	✓	
11	A1.9, 1. 9	Early neonatal deaths (institutional)	3		1		✓
14	A2,2.1.2	Low birth Weight	10		10	✓	
28	A3,3.6.5	TT does used (all ages)/dose opened	7		7	✓	
4	A1.2,1.3	First antenatal attendances	20		20	✓	
60	C4.1,4.1.3	Arthemisin/Lumphantrine	-		1		✓
87	D1,1.2.7	OPD Visits 5-14: Repeat-Male	15		15	✓	
92	D1,1.2.12	OPD Visits >=15-14: Repeat-Female	2		2	✓	
32	B2d.2,2d.5.4	HIV positive women delivered in facility	1		1	✓	
10	A1.5,1.7	Institutional maternal death	1		0		✓
					Total (YES or NO)	**8**	**4**

Using the LQAS Decision Rule Table, the data accuracy in the above example reached 75-80% levels; i.e. it exceeds the expected level of 70% data accuracy.

Table 3: LQAS Decision Rule Table

Decision Rules for sample Sizes of 12 and Coverage Targets /Average of 20-95%																
Sample size	Average Coverage (baselines)/Annual Coverage Targets (monitoring and Evaluations)															
	Less than 20%	20%	25%	30%	35%	40%	45%	55%	60%	65%	70%	75%	80%	85%	90%	95%
12	N/A	1	1	2	2	3	4	5	6	7	7	8	8	9	10	11

For data elements that do not match between what is registered and in the report, causes for discrepancy need to be identified and corrective action to be taken. If the LQAS result is below the expected level (or minimum threshold), facilities need to acknowledge a failure in data quality/ report and involve all relevant staff to check for discrepancy of all data elements, identify the route cause and prepare new report before commencing performance review and report to higher level.

Major possible cause of data discrepancy and solution

Cause of data discrepancy

A. Do not correctly understand the definition of cases or data elements
B. Missing source documents
C. Source documents may not be completely filled (ignoring to fill some columns or spaces)
D. The date may not fall within reporting period (some facilities report up to the date they have compiled the report; but it should rather be reported at a fixed date approved and communicated by Federal Ministry of Health)
E. Data entry errors
F. Arithmetic errors, other errors

Actions need to be taken to improve data discrepancy

A. Provide training or support on data elements, indicator definition, case definitions, recording and reporting guideline
B. Set target to increase LQAS up to acceptable standard in annual plan of health facility and incorporate data quality in performance appraisal of HMIS focal persons and other professionals
C. Before each performance review, conduct integrated supportive supervision and programmatic mentoring focusing on data accuracy in the health facilities.
D. Routinely provide feedback on data quality and recording & reporting procedure to the lower levels
E. Make sure the data recording and reporting avoids double counting of clients and identify dropouts or loss to follow up
F. Make sure all relevant documents are available, e.g. for services delivered in outreach together with HEWs or in case mobile health care teams, the data need to be captured in Field Book or template of the register at facility.
G. Cross check individual medical records, administrative documents or inventory for triangulation

Data Accuracy: At Administrative clusters (Woreda, Zone, and Region)

For assessing the HMIS data accuracy at administrative units, the Routine Data Quality Assessment (RDQA) method will be used at least twice a year.

The RDQA methodology enables quantitative comparison of reported data to recounted data and helps to assess if intermediate aggregation sites are collecting and reporting data accurately. It provides the Verification Factor (i.e. level of under- or over-reporting, if any) for the HMIS data items studied.

Sampling methodology:

For regional level

A sample of 12 Health facilities from within 4 clusters will be used to gain an understanding of the quality of the data. For a regional level data quality assessment, the following steps will be followed:

- In Regions with zones
  - Randomly select 4 zones
  - From each of the selected zones, randomly select three woredas
  - From each of the selected woredas, randomly select one health center or hospital
- In Regions without zones
  - Randomly selected 4 woredas
  - From each woreda select three health centers or hospitals

Data collection procedures for RDQA

1. Select key data elements from the HMIS reports that will be studied (include data elements of 7 to 9 top priority indicators at national level)
2. List the data items in the RDQA table
3. For each of the selected data elements recount the number of cases or events recorded during the reporting period by reviewing the relevant source documents available at the selected sites [A]
4. Copy the number of cases or events for the selected data elements reported by the site during the reporting period from the HMIS reports submitted by the selected sites [B]
5. Add up all the recounted figures for the corresponding data elements from the 12 sites [$\sum$A]
6. Add up all the figures for the same data elements copied from the HMIS reports of all the 12 sites [$\sum$B]
7. Calculate the ratio of recounted to reported numbers. [$\sum$A / $\sum$B]

   This figure gives the Verification**:** Accuracy Ratio for the respective data element studied. Lower than 1 (or <100%) accuracy ratio indicates over-reporting and higher that 1 (or >100%) accuracy ratio indicates under-reporting. The accuracy ratio (or the Verification Factor) is factored into the reported figure to give the actual figures as recorded in the source document.

Table 4: RQDA Table (Verification Factor for Health Facilities Assessed)

HMIS Data elements (example)		Health facility												Total	Verification Factor of HF
		1	2	3	4	5	6	7	8	9	10	11	12		
New acceptors	Recounted figure													∑A =	
	Reported figure													∑B =	
Number of weights measured for children <3 years	Recounted figure													∑A =	
	Reported figure													∑B =	
Measles immunizations for infant <1 yr of age	Recounted figure													∑A =	
	Reported figure													∑B =	
Early neonatal deaths (institutional)	Recounted figure													∑A =	
	Reported figure													∑B =	
TT does given (all ages)/dose opened	Recounted figure													∑A =	
	Reported figure													∑B =	
First antenatal attendances	Recounted figure													∑A =	
	Reported figure													∑B =	
OPD Visits >=15-14: Repeat-Female	Recounted figure													∑A =	
	Reported figure													∑B =	
HIV positive women delivered in facility	Recounted figure													∑A =	
	Reported figure													∑B =	

For example: for a given data element, if the recounted figure from the source document is 200 and the reported figure is 250, then the accuracy ratio of the report is 200/250 = 0.8 (or 80%). Hence, the reported figures should be reduced by 20% to match with the actual figures as recorded in the source document used for verification.

Similarly, if the recounted figure from the source document is 250 and the reported figure is 200, then the accuracy ratio of the report is 250/200 = 1.25 (or 125%). Thus, the reported figures are multiplied by 1.25 to give the actual figures as recorded in the source document.

For Zonal Level

- Randomly selected 4 woredas
- From each woreda select three health centers or hospitals
- Conduct the remaining procedure same as for the regional RDQA

For Woreda Level

- Use census of all health centers and hospitals in the Woreda

- From each health center select two health posts randomly
- Conduct the remaining procedure same as for the regional RDQA for health center and hospitals
- Verification factor for health post will be performed separately to understand the level of accuracy al PHCU level

In general the RHB in consultation with FMOH should take appropriate action based on the finding of RDQA to improve the overall performance of the information system in the following five functional areas:

1. M&E Structures, Functions and Capabilities
2. Indicator Definitions and Reporting Guidelines
3. Data Collection and Reporting Forms and Tools
4. Data management process
5. Linking with national reporting systems

Reporting timeliness and completeness in case of electronic HMIS data entry

In places where electronic HMIS (that is linked to regional server) is used for data entry at woreda level, the data entry should be completed by the 15th of the month. Once the data entry is complete, it should be uploaded into Regional HMIS database.

It may be noted that not all woreda will have internet connections to automatically upload the HMIS data into Regional Server. In those cases, the monthly data must be sent in flash drive or CD to the ZHD for uploading 15th of the month. The ZHD will then upload the data into Regional HMIS database by 21st of the month.

In case of electronic data entry system at woreda level, the WorHO HMIS Focal Person will examine the report tracker inbuilt in the electronic HMIS and communicate with the respective woredas whose reports have not been received. The ZHD and RHB HMIS Focal Person can do the same and alert the respective woreda to take necessary actions.

7. HMIS Data analysis and interpretation

HMIS key indicators

Out of the 108 HMIS indicators, the FMOH has selected 21 indicators as key performance indicators for routine monitoring – i.e. these indicators represent the essential group of indicators for monitoring the key aspects of the health system's performance. Other HMIS indicators as used for more in-depth understanding of performance in the key areas. These key indicators are:

Table 5: Key HMIS Indicators

Key performance area	Key Indicator
Reproductive Health	1. Family Planning Acceptance Rate
	2. Antenatal care coverage
	3. Proportion of deliveries attended by skilled health personnel
	4. Proportion of deliveries attended by HEWs

Key performance area	Key Indicator
Immunization	5. DPT-3 (Pentavalent-3) coverage (>1 children)
	6. Measles immunization coverage(>1 children)
Disease prevention and control	7. Malaria case fatality rate amongst patients under 5 years of age
	8. New malaria cases per 1000 population
	9. New pneumonia cases amongst under 5 children per 1000 population of under 5 years
	10. TB case detection rate
	11. TB cure rate
	12. Clients receiving VCT services
	13. PMTCT treatment completion rate
	14. PLWHA currently on ART
Resources	15. Trace drug availability (in stock)
Utilization	16. OPD attendance per capita
	17. In-patient admission rate
	18. Average Length of stay (in-patients)
	19. Bed Occupancy Rate
Data Quality	20. Reporting completeness rate
	21. Reporting timeliness rate

Every health administrative unit / service delivery unit will display these indicators as relevant and routinely review them during the monthly performance review/management meetings.

In addition to monitoring the overall performance of the health system using the above key indicators, each case team will analyze and review specific indicators reported by that case team. Examples of program related indicators have been discussed is Section 5. Examples of outpatient (OPD) and hospital performance indicators are as following:

HMIS indicators that the OPD case team will specifically focus on are:

- Top 10 causes of morbidity among children < 5 years
- Top 10 causes of morbidity among persons 5yrs or above
- Morbidity attributed to Malaria
- Morbidity Attributed to Measles
- Neonatal tetanus
- Morbidity attributed to Guinea Worm (Dracunculiasis)
- OPD attendance per capita
- OPD visit rate per practitioner per day
- PIHCT service offered, testing and positivity rate

Hospital Key Performance Indicators (KPI) and HMIS

HMIS collects and reports on a number of Hospital Key Performance Indicators. These are listed below:

Outpatient Services

- KPI 2: Outpatient attendances
- KPI 3: Outpatient attendances seen by private wing service

Emergency Services

- KPI 6: Emergency room attendances

Inpatient Services

- KPI 10: Inpatient admissions
- KPI 12: Inpatient mortality
- KPI 14: Bed occupancy
- KPI 15: Average length of stay
- KPI 18: Completeness of inpatient medical records

Maternity Services

- KPI 19: Deliveries (live births and stillbirths) attended
- KPI 20: Births by surgical (C-sections)
- KPI 21: Institutional maternal mortality
- KPI 22: Institutional neonatal death within 24 hours of birth

Referral Services

- KPI 23: Referrals made
- KPI 24: Rate of referrals

Pharmacy Services

- KPI 26: Average stock out duration of hospital specific tracer drugs

Indicator specific analysis and interpretation

The basic analytical procedure for understanding the Health program or Health Institution's performance is to do comparisons:

- Comparison with the targets / performance objectives
- Performance coverage in comparison to eligible population
- Comparisons with previous performance over time (time trends)
- Comparisons with other similar Health Institutions
- Comparisons with national or international standards
- Disaggregate performance to address equity by socio demographic variables (by sex, age etc)
- In cases where there is high inter-facility, inter-district and/or inter- regional movement of clients to receive services, analyses need to be conducted using appropriately disaggregated data according to the place of residence of the clients to allow understanding of real performance of the facility/district/region for program planning and quantification of drug needs.

Interpretation (or explanation/assessing the findings in the backdrop of previously agreed upon criteria) of the performance data should be done based on the context. Contextual factors that should be considered include national/regional/local health priorities, resource availability, operational environment, linkages to referral facilities, remoteness of the health institution, involvement of other sectors, and level of participation of community or networks, technical assistance from other implementing partners etc.

8. Forums for HMIS Data Use

Woreda based planning

In Ethiopia, the MOH has adopted a "One Plan, One Budget and One Report" policy. According to this policy, "One Plan" is the idea that all the major activities happening at various levels of the health system are included in one joint plan. "One plan" means that all stakeholders (government, donor, NGOs and the community) agree to be part of a broader sectoral plan[11]. This annual woreda-based plan is a sub-set of the country-wide and agreed-upon health sector strategic plan – the Health Sector Development Program (HSDP)[12]. HSDP is the main medium for translating the health component of the National Growth and Transformation Plan (GTP). To ensure one plan principle, the planning exercise is undertaken by a top-down and bottom-up approach and horizontal alignment[11].

HSDP-IV has been developed using the Balanced Scorecard (BSC) framework. Accordingly, HSDP-IV has three sector wide strategic themes with results and ten strategic objectives. Marginal Budgeting for Bottleneck (MBB) tool is also used in the planning process to systematically look into the health system bottlenecks, high impact interventions, different scenarios and associated costs for achieving results[13].

Based on the broader objective, priorities and the targets of the five-yearly HSDP an indicative annual plan is formulated at the Federal level. The indicative plan is important to give direction and align the plans at all levels with the priorities. The Federal level indicative plan is shared with the Regions who accordingly prepare their own Regional Indicative Plan. Based on this Regional indicative plan the zonal indicative plan is prepared and sent to the woredas. The Woreda Health Offices prepare finalized Woreda Plans using evidence-based planning approach and Balanced Scorecard planning framework[14]. These HSDP Woreda Plans are aggregated to the regional and national levels. Hence issues at grass root level are reflected at the national level. Fig 1.

The Woreda-based Health Sector Planning is an evidence-based result-oriented planning exercise. Most of the indicators used for the planning and monitoring the implementation of the plan come from HMIS. A list of indicators used for WB-HSP is given in the Annex.

The Woreda-based Health Sector Plan and the performance objectives set within that plan will become the basis of the monthly, semi-annual and annual performance review meetings.

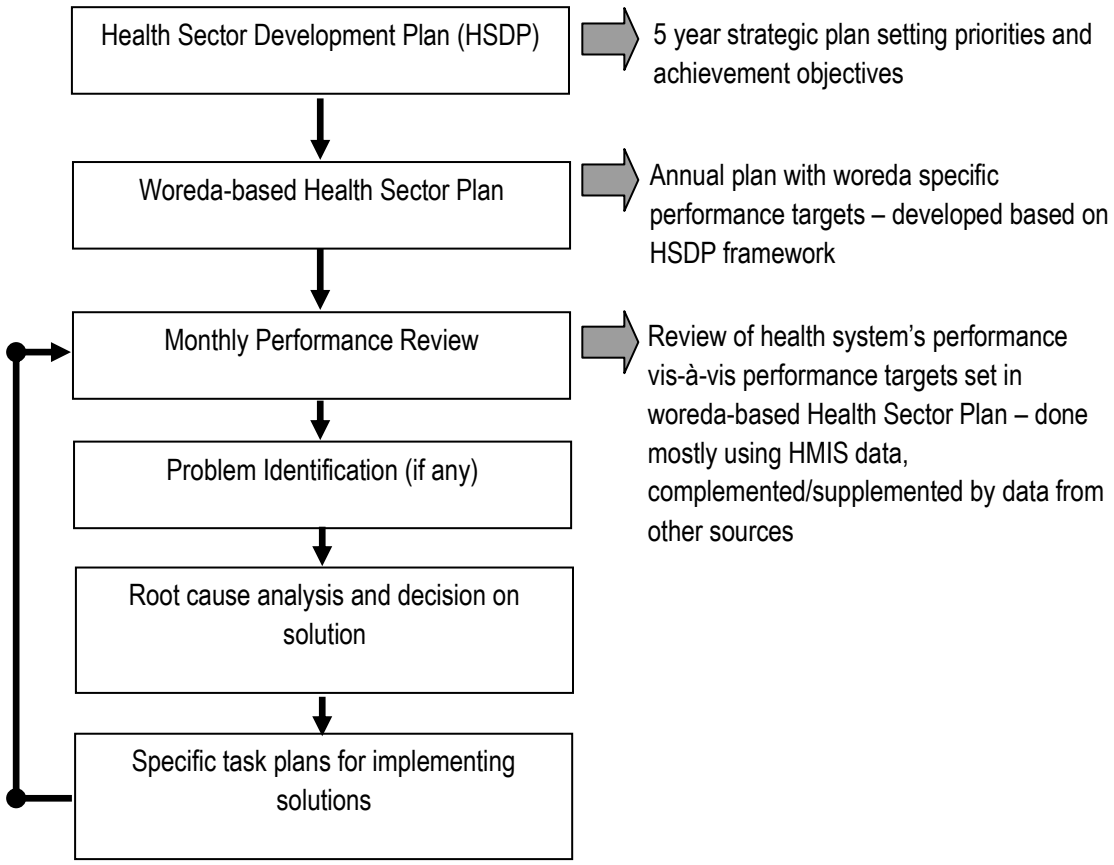
[11] Federal Democratic Republic of Ethiopia, Ministry of Health: Woreda-Based Health Sector Planning (WB-HSP); Training Material version 2

[12] "The health sector will have one country-wide shared and agreed strategic plan (HSDP) developed through extensive consultation. All other regional, zonal, woreda and facility plans are local sub-sets of this strategic plan and should be consistent with the latter." Federal Democratic Republic of Ethiopia, Ministry of Health: The HSDP Harmonization Manual (HHM) First Edition 2007EC

[13] Federal Democratic Republic of Ethiopia, Ministry of Health: Health Sector Development Program (HSDP)-IV – Woreda Based Annual Core Plan EFY 2004 (2011/2012)

[14] Federal Democratic Republic of Ethiopia, Ministry of Health: Health Sector Development Program (HSDP)-IV – Woreda Based Annual Core Plan EFY 2003 (2010/11)

Figure 7: The Planning & Performance Monitoring Flow



Monthly Performance Review Meetings

Objective:

The overall objective of the monthly performance review meetings is to assure result-based monitoring and evidence-based decision making for improving the health sector's performance in-line with the WB-HSP and HSDP.

Organization of the Performance Review Team

A. Regional Health Bureau, Zonal Health Department , Special Woreda Health Office, Woreda Health Office and Town Administration Health Office
    1. All management members of the Health Administrative Unit are members of the Performance Review Team (PRT) of that unit.
    2. Heads of Regional Health Bureau, Zonal Health Department, Special Woreda Health Office, Woreda Health Office and Town Administration Health Office are chair person for the respective Performance Review Team. In the absence of heads official delegate can chair the team meeting.
    3. Monitoring and Evaluation Process Owner/ Section will serve as the Secretary of the PRT. The secretary will be responsible for:
        i. In consultation with the Chair of PRT, calling the meeting and communicate the meeting date to all the members.

ii. Ensuring that HMIS reports are available timely and completely for the respective process owner to prepare their performance review findings
iii. Facilitating process owners to review and present their organized/analyzed monthly report to the team
iv. Ensuring recording of the meeting minutes; archive the minutes and circulate them to all concerned

4. The Performance Review Team will meet on monthly basis and assess/evaluate the overall performance accordingly
    i. Agenda for the next meeting will be set during each meeting. However, any issues arising later and deemed necessary for discussion will be added to the agenda by the Secretary in consultation with the Chair
    ii. Review/follow-up of decisions made during the previous meetings will be included in the agenda
    iii. The agenda will primarily focus on the implementation of Woreda-Based Health Sector Plan and include other issues or priorities (e.g. HDA, any reported epidemic, etc.) set by the FMOH, RHB, ZHD or WorHO. The review will consider plan versus achievement and the extent of the coverage from the total population eligible for that specific service.
    iv. Each process owner/program manager will prepare and present his/her own Business Process or Program performance using HMIS data and/or other data
    v. Discussions should focus on appreciating the progress or identifying problem areas and their root causes, deciding and prioritizing solutions. PRT needs to discuss on the execution level, practicality of previous decisions and the extent of removal/mitigation of the previous problems. If the problem is repeatedly reoccurring from time to time the PRT should flag it for seeking in-depth analysis or support from higher level.
    vi. Decisions on solutions should clearly state “What”, “by When”, “by Whom” and “with What resources”
    vii. All decisions will be circulated to the concerned persons in a timely manner

B. Health Facility level
    1. Hospital Managing Director, Health Centre/PHCU Director or official delegate will be the chair person for the Performance Review Team
    2. All case team coordinators will be team members
    3. The PRT may invite the HEWs to participate in the meeting on need base
    4. HMIS focal person will serve as secretary and responsible for:
        i. Ensuring timeliness and completeness of HMIS reports
        ii. Facilitating case team coordinators to review and present their organized/analyzed monthly report to the team
        iii. Take meeting notes and after finalizing the minutes, circulate the meeting minutes through the Chair of PRT
        iv. Circulate the meeting minutes in a timely manner
    5. The Performance Review Team will evaluate the overall performance accordingly
        i. The Performance Review Team will meet on monthly basis and assess/evaluate the overall performance of the Hospital or the Primary Health Care Unit (PHCU) accordingly
        ii. Agenda for the next meeting will be set during each meeting. However, any issues arising later and deemed necessary for discussion will be added to the agenda by the Secretary in consultation with the Chair

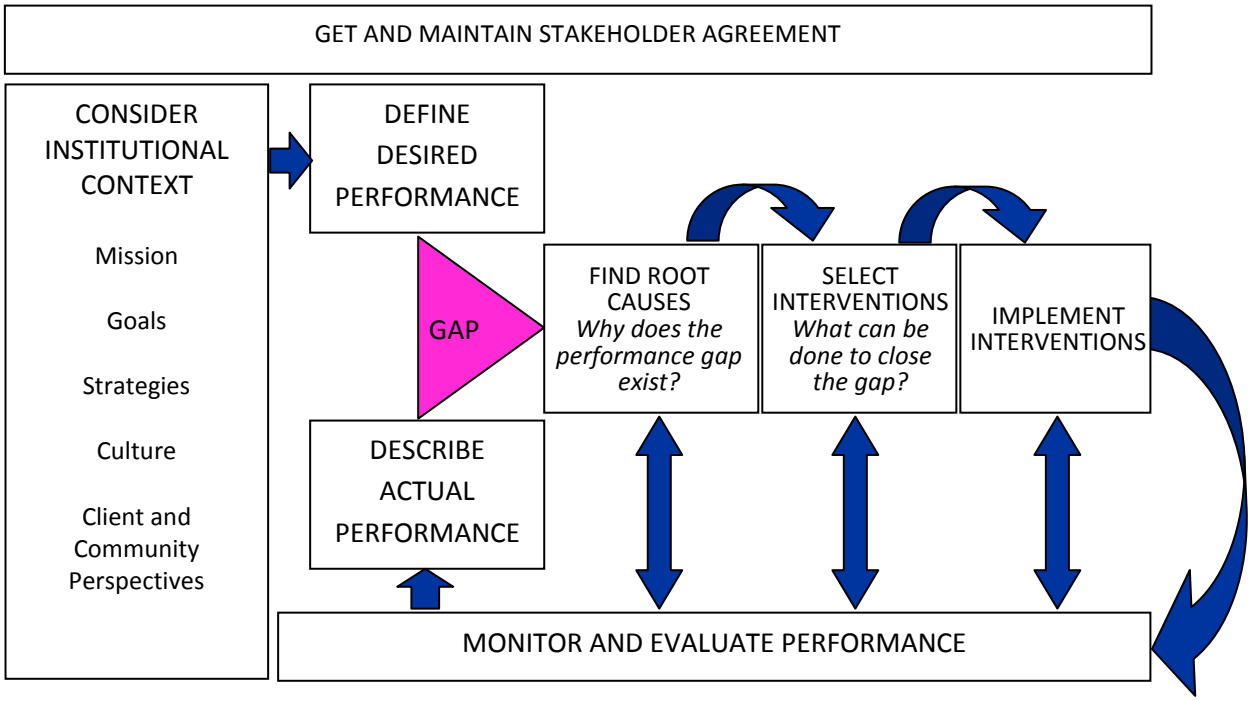
iii. Review/follow-up of decisions made during the previous meetings will be included in the agenda
iv. The agenda will primarily focus on the implementation of Woreda-Based Health Sector Plan and include other issues or priorities (e.g. HDA, any reported epidemic, etc.) set by the FMOH, RHB, ZHD, WorHO or the Health Facility management
v. Each Case Team Coordinator will prepare and present his/her own Case Team or Program performance using HMIS data and/or other data
vi. Discussions should focus on appreciating the progress or identifying problem areas and their root causes, deciding and prioritizing solutions
vii. The owner for the solution, resources required for its implementation and how those resources will be mobilized are specified and time frame for its implementation is set during the meeting

6. All decisions will be circulated to the concerned persons in a timely manner

9. Performance Review Meeting Procedure - Using HMIS data for Performance Monitoring and Improvement

During the annual Woreda-based planning and the monthly Performance Review Meetings, HMIS data will be used to monitor progress vis-à-vis performance targets set at the time of annual planning or subsequent review meetings using the Performance Improvement framework for achieving the desired institutional results as laid down in the WB-HSP and HSDP. Within this Performance Improvement framework, results are achieved through a process that considers the institutional context, describes desired performance, identifies gaps between desired and actual performance, identifies root causes, selects interventions to close the gaps and measures changes in performance[15].

Figure 8: The Performance Improvement Framework



[15] http://www.reproline.jhu.edu/english/6read/6pi/pi_what.htm accessed on 08/31/2012

The desired performance is defined in terms of performance targets by quantifying changes expected in a specified timeframe. These targets specify a minimum level of performance, or define aspirations for improvement[16]. These performance indicators and targets have been defined and quantified in the Woreda-based Annual Core Plan.

During the monthly Performance Review Meetings, the health unit may desire to set their own targets based on the national or regional targets. In those cases the following approaches may be followed:

Figure 9: Target Setting – Example 1: setting targets based on epidemiological situation, including size estimates of population sub-groups considered to be most at risk.[17]

The following three steps are recommended for setting targets:

1. Define populations and subpopulations of people at risk for infection and those already infected and in need of diagnosis, treatment, care or support services.
2. Define the number of people receiving prevention, treatment and care interventions and services for each defined subpopulation.
3. Identify activities and establish targets to reduce the impact of identified barriers, constraints and obstacles.

Figure 10: Target Setting – Example 2: setting targets based on program's "added value" 18

I. Project a future trend, then add the "value added" by program/project interventions
This involves estimating the future trend without any special effort or intervention, and then adding whatever gains can be expected as a result of the intervention. For this, historical data are required that can be used to establish a trend line.

II. Establish a final performance target for the end of the planning period and then plan progress from the baseline level
This approach involves deciding on the program's performance target for the final year, and then defining a path of progress for the years in between. Final targets may be based on benchmarking techniques or on judgments of experts, program staff, and other stakeholders about expectations of what can be reasonably achieved within the planning period given the stage of program implementation, resource availabilities and constraints. In FMOH operational annual plan considers target set in HSDP IV during Woreda based planning

III. Set annual performance targets
This approach is similar to the preceding, except it is based on judgments about what can be achieved each year, instead of starting with a final performance level and working backwards.

IV. Set target based on estimation
This method uses modeling adapted to local context to estimate level of service delivery output or impact. It uses estimation tools made at international or national level. National survey data, research findings and resource availability are used to estimate the level of achievement.

[16] I&DeA: Target Setting – A Practical Guide. Improvement through performance management, measurement and use of information http://www.idea.gov.uk/idk/aio/985665

[17] 2011 The Global Fund to Fight AIDS, Tuberculosis and Malaria. Monitoring and Evaluation Toolkit - 4th Edition

[18] USAID PAIMAN: Guidelines for Setting Performance Targets at District Level http://paiman.jsi.com/Resources/Docs/guidelines-for-setting-performance-targets.pdf

During the Performance Review Meetings, the actual performance in comparison to the performance target will be presented by the respective Business Process Owner, Case Team Coordinator or Program Manager. If there are performance gaps, the team participating in the meeting will discuss the possible causes and discuss and prioritize solutions. For each solution agreed, specific time-bound tasks will be assigned to specific personnel.

The major findings or issues discussed and the tasks agreed for addressing them will be duly recorded in the meeting minutes.

The decisions will be communicated to the relevant persons accordingly. During the subsequent meeting, the implementation status of the decision(s) and the progress made towards the performance targets will be revisited for any further action, if necessary.

Tools to assist in decision making

Statistical and data presentation tools, e.g., Bar and Pie Charts, Run Charts, Control Charts, Pareto Charts and Scatter diagrams help to identify a problem and also analyze it. However, for a more in-depth analysis of the problem, deciding on root causes and developing solutions, qualitative tools are more handy and useful. There are several such tools that can aid in the process.

One simple approach developed by Toyota and called "5 WHYs" is to ask "Why" several times until sufficient clarity regarding the cause of the problem has been achieved to guide to an actionable solution. However, this approach can lead to a single cause and may ignore other contextual factors influencing the occurrence of the problem.

The "Fish-bone Diagram" (Cause-and-Effect Diagram, Ishikawa Diagram) helps to bring in various categories of contextual factors in the root cause analysis. Similarly, a (Problem) Tree Diagram helps to broaden the exploration to major groups of causes and then further explores the chain of events or causes under each of the broad category. Other qualitative tools for root cause analysis include System modeling and Flow charting[19].

The FMOH follows the framework endorsed by the government to monitor the Growth and Transformation Plan (GTP). It is a combination of the 5 WHYs, Fish bone diagram and Problem tree diagram. The PRT at each level identify bottleneck and root cause(s) implicitly using the above methods in mind. Then the bottlenecks are categorized into inputs, attitude/ perspective, training or skill and M&E. For problems that repeatedly reoccurring the PRT should further look into the structure and system.

[19] Massoud, R., et al. 2001. A Modern Paradigm for Improving Healthcare Quality; *QA Monograph Series* 1(1) Bethesda, MD: Published for the U.S. Agency for International Development (USAID) by the Quality Assurance Project.

Figure 11: Tips to facilitate root cause analysis and solution

- Focus on identification of issue(s) not person or blame
- Consider the logic of a program or strategy map (attention to subject, expert insight)
- See the whole picture (create synergy)
- Challenge assumptions that are taken for granted
- Identify leverage points
- Further look from linear to multi dimensional causal effect (Looks for interdependencies)
- Include the perspective of all stakeholders
- Develop new ways of looking at old problems.
- Pay attention and gives voice to the long-term.
- Hold the tension of paradox and controversy without trying to resolve it quickly. (Assess tradeoffs, anticipate consequence, misalignment of design, structure and system, look for balancing act, etc.)

10. Guidelines on data display

Information display is helpful for clients, health professionals and managers to understand and keep in mind their status in their day to day activities. Data are mainly displayed in tables and charts. The use of data in chart form has the following advantages than raw data/ number. Graphs are interesting and catchy; easily and quickly understandable specially for changes; graphs can effectively communicate ideas/ relationships to others, examine degree of consistency or scattering of data, discover or identify trends particularly in time related data, identifying points that may be erroneous because they are outside of the normal grouping of data and easily relate different sets of data. Data can be easily displayed in charts using Microsoft excel or other spreadsheets/statistical packages which can help to construct simple charts such as bar, column, line, pie, scatter, area, radar (spider diagram), histogram and Gantt charts. Bar, line and pie chart are widely used in HMIS. Health facilities or administrative levels should use different kind of charts with brief explanation (interpretation) to guide the audience in turn to maximize utility of the information.

Each Health Institution will maintain a **minimum** set of standard charts displayed at prominent sites. The purpose of **minimum** standard charts is to ensure that:

- Basic health information is regularly updated and monitored.
- Basic health information is displayed where it will have the widest visibility to health workers, supervisors and visitors.
- The same data are maintained and analyzed at respective levels (PHCUs, Woreda Health Offices, Zonal Health Departments, and Regional Health Bureaus). This standardization will assist managers and supervisors compare the time trend and provide assurance that performance is being actively examined.

The following table lists the charts and the frequency of updating.

Table 6: Minimum Display Charts to Be Maintained by Health Institutions

Name of Chart	User	Format	Frequency of Update
Map of catchment area	RHB/ZHD, WorHO, HF	map	Annual
Catchment Population Profile	RHB, ZHD, WorHO, HF	table	Annual
Ten Top Causes of Morbidity (Males & Females)	FMOH, RHB/ZHD, WorHO, HF	bar chart	Annual
Ten Top Causes of Morbidity In < 5 Children	FMOH, RHB/ZHD, WorHO, HF	bar chart	Annual
Ten Top Causes of Mortality in Hospitals	FMOH, RHB/ZHD, hospitals	bar chart	Annual
Staffing	ZHD, WHO, HF	table	As staff change
Outreach Locations and Schedule	HF	table (also on Catchment Area Map)	As locations or schedule change
Reproductive Health (ANC and skilled attendant deliveries (at HC/hospital) or HEW assisted deliveries (at HP))	RHB, ZHD, WHO, HF	line graph: achievement v/s eligible	Monthly
Immunization Monitoring For < 1 Children (Penta-3, Measles)	RHB, ZHD, WHO, HF	line graph: achievement v/s eligible	Monthly
Disease prevention and control Disease cases (Malaria, all ages, and Pneumonia amongst Under 1s) HIV/AIDS (VCT, PMTCT, and ART)	RHB, ZHD, WHO, HF	line graph: current and previous year	Monthly
Utilization OPD attendance Inpatient admission Average length of stay Bed occupancy	RHB, ZHD, WHO, HF	line graph: current and previous year	Monthly

11. Using evidences from other information sources

During the performance review meetings, the team may consider other data sources for better understanding of the situation and/or deciding on root cause and their solution. Some of the other information sources for that purpose are:

a. Demographic Health Survey (DHS) reports
b. Rapid assessments – conducted by the concerned health institution or other partners
c. Extracting data from HMIS records at health facilities – HMIS records (e.g. register or health cards) contain patient/client specific information in some details that are not reported in the HMIS reports. Special efforts may be taken to collect data from these records according to the need or objectives of special surveys conducted for some specific purposes.
d. Census data

e. Evaluation findings
f. HRIS, LIS, IPSMIS/ LMIS and other program reports

12. Communicating evidence based sector plans & performance reports to local Cabinet/Council

In Ethiopia, the governance structure is decentralized to regions, zones, woredas and kebele level. These sub-national governance structures have the primary responsibility in allocating resources for and decision-making, management and delivery of the most basic services to the populace[20]. Each level of governance, except kebele, has a tripartite structure:

- Council
- Executive cabinet
- Sector bureaus

The council members are directly elected representatives. For example, in Regional Council the members are the elected representatives from the woredas and in the woreda council, the members are directly elected representatives from the kebeles in the woreda. The executive cabinet or committee is constituted by the sector bureau heads and a number of council members selected by the council head (e.g. the President of the Regional Council). In case of the kebele, the kebel cabinet is comprised of four council members, one development agent and one Health Extension Worker.

The main expenditure responsibility of the woredas in health sector is the provision of primary health care through primary health institutions (health centers and health posts). One of the main functions of the cabinet is preparation of the annual development plans and budget and monitoring their implementation. The respective council approves that plan and monitors the implementation.

The sector bureau heads prepare the initial sector plan and budget proposal and submit it for approvals. They are also responsible to present the progress of the plan implementation and seek cabinet/council's assistance for issues that need support and decisions beyond the sectors capacity.

Thus, for the health sector, the sector heads at each governance level should be well equipped to communicate evidence-based health and related information to the respective cabinet and the council.

Objectives of the communication[21] to respective cabinet and council

The primary purposes of this communication by the health sector to the cabinet and council are:

- To gain support and approval for the annual plan and budget proposal by presenting problem(s) identified, proposing solution(s) and feasible recommendations based on evidence
- Presenting progress in health sector in terms of key performance indicators and solicit or advocate for resources or actions for issues beyond the capacity of the health sector

For every issue or recommendation presented at the respective council or cabinet by the health sector head, there should be compelling evidence to support that recommendation. HMIS is one of the major sources for providing that evidence. For presenting progress, appropriate chart or graphs should be used to show the performance in comparison to the target, previous performance and/or time trend.

[20] Ministry of Finance & Economic Development (MOFED): Layperson's Gide to Public Budget Process at Regional Level – A prototype for regions. August 2009

[21] USIAD / MEASURE Evaluation: Making Research Findings Actionable - A quick reference to communicating health information for decision-making. December 2009 (MS-09-39)

13. Annexes

Annex 1: List of HMIS Indicators: Current (2010-12)

S.No	*Current HMIS Indicators*
A. Family Health	
A1. Reproductive health	
	Total indicators: 12
1	Contraceptive prevalence rate
2	Contraceptive acceptance rate
3	Antenatal care coverage
4	Abortion care
5	Delivery attended by Skilled attendant
6	Delivery attended by HEW
7	tTBA
8	Caesarean section rate
9	Proportion of maternal deaths (institutional)
10	Stillbirth rate (institutional)
11	Neonatal death rate (institutional)
12	Postnatal care coverage
A2. Child health	
	Total indicators: 2
1	Low birth weight proportion
2	Proportion of moderate/severe malnutrition amongst weights recorded for children under 3 years
A3. EPI	
	Total indicators: 6
1	DPT1+HepB1+Hib1 coverage
2	DPT3+HepB3+Hib3 coverage
3	Measles immunization coverage
4	Full immunization coverage
5	Protection at birth (PAB) against neonatal tetanus
6	Vaccine wastage rate
B. Disease Prevention and Control	
B1. All diseases	
	Total indicators: 5
1	Top 10 causes of morbidity amongst children under five years
2	Top 10 causes of morbidity, five years and above
3	Top 10 causes of mortality amongst children under five years
4	Top 10 causes of mortality, five years and above
5	In patient mortality rate
	Total indicators: 4
1	Malaria cases in under 5 children reported per 1000 population (reported by clinical , confirmed (pf, pv)

S.No	*Current HMIS Indicators*
2	Malaria cases in age groups 5 years and above reported per 1000 population (clinical, confirmed (*pf, pv)*
3	Case fatality rate of malaria in under 5 children [in patients]
4	Case fatality rate of malaria in age groups 5 years and above [in patients]
B2b. TB and Leprosy	
	Total indicators: 10
1	Case detection rate of new smear positive pulmonary TB patients
2	Smear positive TB death rate
3	Smear positive TB treatment success rate
4	Smear positive TB cure rate
5	Smear +ve TB defaulter rate
6	New cases of leprosy
7	Grade II disability rate amongst new cases of leprosy
8	Proportion of leprosy cases amongst children under 15 years of age
9	Leprosy treatment completion rate Multi-bacillary (MB) leprosy
10	Leprosy treatment completion rate Paucibacillary (PB) leprosy
B2c. TB/HIV co-infection	
	Total indicators: 2
1	Proportion of registered TB patients who are tested for HIV
2	Proportion of registered TB patients who are HIV positive
B2d. HIV/AIDS	
	Total indicators: 14
1	Clients receiving pretest counseling (VCT)
2	Clients receiving pretest counseling (PITC)
3	Clients receiving HIV test (VCT)
4	Clients receiving HIV test (PITC)
5	Clients with positive HIV test (VCT)
6	Clients with positive HIV test (PITC)
7	Clients with at least one ANC visit (at PMTCT site)
8	Pregnant women receiving HIV test
9	Pregnant women with positive HIV test
10	HIV-infected pregnant women receiving full course of ARV prophylaxis
11	Persons ever enrolled in HIV care
12	Persons ever started on ART
13	Persons currently receiving ART (by regimen)

S.No	*Current HMIS Indicators*
14	Survival rates at 6, 12, 24, 36, etc months
B2e. Other communicable diseases, including diseases targeted for eradication or elimination	
	Total indicators: 6
1	Case fatality rate for meningitis [inpatients]
2	Polio cases
3	Acute flaccid paralysis (non-polio) (AFP) rate
4	Measles cases
5	Neonatal tetanus cases
6	Guinea worm cases
B3. Non-communicable diseases	
	Total indicators: 1
1	Cataract surgical rate
B4. Hygiene and Environmental Health	
	Total indicators: 2
1	Latrine Coverage
2	Safe water coverage
	Total indicators: 1
1	Facility to population ratio (by type of facility)
	Total indicators: 8
1	Government budget allocation to the health sector (absolute amount)
2	Per capita public expenditure on health
3	Percentage of non-salary recurrent budget from total recurrent budget at woreda level
4	Proportion of drug budget out of the total recurrent budget
5	Share of internal revenue generated to total health budget
6	Proportion of reimbursed amount out of total patient fees waived
7	Proportion of hospital recurrent expenditures spent on administration
C3. Human Resources	
	Total indicators: 3
1	Health Staff to population ratio by category (doctor, health officer, nurse, midwife, health extension worker)
2	Attrition rate by category (doctor, health officer, nurse, midwife, health extension worker)
3	Proportion of health professionals who have undergone in service training during the last one year
C4. Logistics	
	Total indicators: 2
1	Essential drugs availability (tracer drugs including contraceptive) by health facility level
2	Average stock out duration for essential drugs (tracer drugs including contraceptive) by health facility level
D. Health Systems	
D1. Health service coverage and utilization	
	Total indicators: 5

S.No	*Current HMIS Indicators*
1	Outpatient attendance per capita
2	OPD visits per practitioner per day, disaggregated by level
3	Admission rate
4	Bed occupancy rate
5	Average length of stay
D2. Management	
	Total indicators: 2
1	Number of supervisory visits received
2	Number of self-assessment and participatory review meetings held
D3. HMIS and M&E	
	Total indicators: 2
1	Completeness and timely submission of routine health and administrative reports
2	Data quality

Annex 2: List of Indicators for the strategic and annual plans

S.N	Indicator	Numerator/ Denominator
1. Leadership and Governance		
1.1. Community Empowerment		
1.	Proportion of model Households graduated	Cumulative number of model Households graduated
		Total number of households
1.2. Monitoring and evaluation and Operational Research		
2.	Proportion of Integrated supportive supervision (ISS) conducted in a given period	Number of ISS conducted in a given period
		Planned number of ISS to be conducted in a given period
3.	Proportion of health facilities (Health center and health posts that conducted performance monitoring and quality improvement	Number of health facilities that conducted performance monitoring and quality improvement
		Number of health facilities (health centers and health posts)
4.	Report completeness	Total number of reports received
		Total number of reports expected
5.	Report timeliness	Total number of reports received on time
		Total number of reports expected
6.	Correspondence between data reported and recorded (LQAS)	Total number of samples within 80%
		Total number of samples taken
1.3. System Strengthening and Capacity Building		
7.	Proportion of development partners/ NGOs aligned their plan	Number of development partners/ NGOs aligned their plan
		Total number of development partners/ NGOs in the woreda
2. Strengthening Service delivery		
2.1. Maternal, Newborn and Adolescent Health service		
8.	Contraceptive Prevalence rate	Number of women of reproductive age group who are using (whose partner is using) a contraceptive method
		Total number of women aged 15 -49 years who are currently married or in union
9.	Contraceptive Acceptance Rate	Total number of new and repeat acceptors
		Total number of women of reproductive (15-49 years) age who are not pregnant
10.	Proportion of pregnant women who attended ANC 1+ during the current pregnancy	Number of pregnant women who attended at least one ANC visit
		Total number of expected pregnancies
11.	Proportion of pregnant women who attended ANC4+ during the current pregnancy	Number of pregnant women who attended at least four ANC visit
		Total number of expected pregnancies
12.	Proportion of infants who were protected from neonatal tetanus at birth by the immunization of their mothers with tetanus toxoid (TT2+) before the birth	Number of infants whose mothers has protective doses of TT
		Total live births
13.	Proportion of non-pregnant women who received TT2+ vaccine	Number of non-pregnant women who received TT2+ vaccine
		Total number of 15-49 years non-pregnant women
14.	Proportion of deliveries attended by HEWs	Number of deliveries attended by HEWs
		Total number of expected deliveries
15.	Proportion of deliveries attended by skilled birth attendants	Number of deliveries attended by skilled birth attendants
		Total number of expected deliveries
16.	Proportion of women who received care at least once during postpartum from a health professional including HEWs	Number of women who received at least one postnatal care
		Total number of expected deliveries

17.	Proportion of safe abortion services provided as far as the law permits	Number of safe abortion services provided as far as the law permits
		Total number of expected abortion
18.	Proportion of health centers with B-EmONC service	Cumulative number of health centers with B-EmONC service
		Total number of available health centers
19.	Proportion of health centers with C-EmONC service	Cumulative number of health centers with C-EmONC service
		Total number of expected health centers for C-EmONC service (1 :100,000 population)
20.	Proportion of pregnant women counseled and tested for PMTCT	Number of pregnant women counseled and tested for PMTCT
		Total number of expected pregnancy
21.	Proportion of HIV+ pregnant women received ARVs for prophylaxis	Number of HIV+ pregnant women received ARVs for prophylaxis
		Total number of expected HIV positive pregnant mothers
22.	Proportion of HIV positive deliveries with complete prophylaxis (ARV is complete when both the mother and the child took the drug)	Number of HIV positive deliveries with complete ARV prophylaxis
		Total number of expected HIV positive deliveries
23.	Proportion of HIV exposed infants for whom DNA PCR done	Number of HIV exposed infants for whom DNA PCR done
		Total number of expected HIV exposed infants
24.	Proportion of asphyxiated newborns who are resuscitated	Newborns with asphyxia received appropriate resuscitation
		Total number of newborns with asphyxia
25.	Proportion of newborns with sepsis who are treated	Newborns with sepsis who are treated
		Total number of newborns with sepsis
26.	Proportion of health facilities providing youth friendly service (with minimum service package)	Cumulative number of health facilities providing youth friendly service
		Total number of health facilities
27.	Proportion of teenage pregnancy (pregnancies among under 19 years)	Number of teenage pregnancies
		Total pregnancies
28.	Prevalence of Female Genital cutting (FGC)	Number of women aged 15-49 years that reported undergoing any form of genital cutting
		Total number of women aged 15-49 years
2.2. Child Health services		
29.	Proportion of live births who received a dose of BCG	Number of children received BCG vaccine before 1st birthday
		Total number of live births
30.	Proportion of surviving infants who received Polio-3	Number of children received third dose of polio vaccine before 1st birthday
		Total number of surviving infants
31.	Proportion of surviving infants vaccinated for Penta-1	Number of children received first dose of Pentavalent vaccine before 1st birthday
		Total number of surviving infants
32.	Proportion of surviving infants vaccinated for Penta-3	Number of children received third dose of Pentavalent vaccine before 1st birthday
		Total number of surviving infants
33.	Proportion of surviving infants vaccinated for measles	Number of children received measles vaccine before 1st birthday
		Total number of surviving infants
34.	Proportion of surviving infants vaccinated Pneumococcal vaccine	Number of children received Pneumococcal vaccine before 1st birthday
		Total number of surviving infants
35.	Proportion of surviving infants vaccinated Rota vaccine	Number of children received Rota vaccine before 1st birthday
		Total number of surviving infants

36.	Proportion of infants fully immunized	Number of children received all doses of vaccine before 1st birthday
		Total number of surviving infants
37.	Proportion of children under 5 years with Diarrhea treated with some kind of ORT	Number of episodes of diarrhea treated among under five children
		Total number of expected diarrhea episodes among children under five
38.	Proportion of children under 5 years with pneumonia treated with antibiotics	Number of episodes of pneumonia treated among children under five
		Total number of expected episodes of pneumonia among children under five
39.	Proportion of health center Providing IMNCI services	Cumulative number of health centers Providing IMNCI s
		Total number of available health centers
40.	Proportion of kebeles that implemented community IMNCI	Cumulative Number of kebeles that implemented community IMNCI
		Total number of kebeles in the Woreda
41.	Proportion of under five children who received Zinc for diarrhea management	Number of episodes of diarrhea among under five children who received Zinc for treatment
		Total number of expected diarrhea episodes among children under five
42.	Proportion of children under five with fever being diagnosed and treated with anti-malaria	Number of children under five with fever diagnosed and treated with anti-malaria
		Total number of expected malaria cases among children under five
2.3. Nutrition		
43.	Proportion of children who started breastfeeding within 1hour of birth	Number of newborns who started breastfeeding within 1hour of birth
		Total number of live births
44.	Proportion of infants with exclusive breastfeeding (0-6 months)	Number of infants aged 6mo to 1 year who are exclusively breastfed for the first six month of life
		Total number of infants aged 6mo to 1 year
45.	proportion of children 6-59 months of age supplemented with Vit A Bi-annually	Number of children 6-59 months of age supplemented with Vit A Bi-annually
		Total number of children 6-59 months of age
46.	Proportion of children 2-5 years of age de wormed Bi-annually	Number of children 2-5 years of age de wormed Bi-annually
		Total number of children 2-5 years of age
47.	Proportion of children under 3 years of age whose weight is monitored	Number of children under 3 years of age whose weight is monitored
		Total number of children under 3 years
48.	Proportion of severely malnourished children 6-59 months receiving therapeutic feeding	Number of severely malnourished children 6-59 months receiving therapeutic feeding
		Total number of severely malnourished children 6-59 months
49.	Proportion of pregnant mothers supplemented with iron folate	Number of pregnant mothers supplemented with iron folate
		Total number of expected pregnancies
50.	Proportion of households using iodized salt	Number of households using iodized salt
		Total number of households
2.4. Hygiene and Environmental Health Services		
51.	Proportion of households with latrine	Cumulative number of household with latrine
		Total number of Households
52.	Proportion of households (families) utilizing latrines	Number of household using latrine
		Total number of households

53.	Proportion of households (families) using safe drinking water	Number of households using safe drinking water
		Total number of households
54.	Proportion of food and drinking establishment inspected at least once every month	Number of food and drinking establishment inspected at least once
		Total number of food and drinking establishment
55.	Proportion of schools with WASH facility [water point, latrine and hand washing facility)	Number of schools with WASH facility [water point, latrine and hand washing facility)
		Total number of schools [Public and private]
56.	Proportion of health facilities with WASH facility [water point, latrine and hand washing facility)	Number of health facilities with WASH facility [water point, latrine and hand washing facility)
		Total number of Health facilities [HP & HC]
57.	Proportion of institutions utilizing safety protection devices	Number of institutions utilizing safety protection devices
		Total number of institutions
2.5. Prevention and control of HIV/AIDS		
58.	Proportion of young people aged 15-24 who use condom consistently while having sex with non-regular partners	Number of 15-24 years old using condom consistently
		Total number population 15-24 years old
59.	Proportion of population aged 15-49 years with comprehensive knowledge on HIV/AIDS	Number of 15-49 years old who have comprehensive knowledge on HIV/AIDS
		Total population aged 15-49 years
60.	Proportion of STI cases managed	Number of STI cases managed
		Expected number of STI cases
61.	Proportion of individuals who received VCT services	Number of individuals who received VCT services
		Number of 15 -59 years
62.	Proportion of individuals who received HIV testing that was initiated by a provider	Number of individuals who received HIV testing that was initiated by a provider
		Total number of OPD visits and clients of family planning service
63.	Cumulative number of PLHIV ever enrolled in HIV care [Pre ART]	
64.	Cumulative number of People Living With HIV/AIDS ever enrolled in ART	
65.	Proportion of eligible adult PLHIV currently receiving ART	Number of adult PLHIV currently receiving ART
		Total number of adult People with HIV who are eligible for ART
66.	Proportion of eligible children under 15 years of age receiving ART	Number of children under 15 years of age with HIV receiving ART
		Total number of children under 15 years of age with HIV who are eligible for ART
67.	Proportion of eligible HIV+ pregnant women receiving ART	Number of pregnant women with HIV receiving ART
		Total number of pregnant women with HIV who are eligible for ART
68.	Proportion of HIV positive clients screened for TB	Number of HIV positive clients screened for TB
		Total number of HIV positive clients
69.	Proportion of OVC who received educational support	Number of OVC who received educational support
		Total number of OVC who are in need of the support
70.	Proportion of OVC who received food support	Number of OVC who received food support
		Total number of OVC who are in need of the support
71.	Proportion of OVC who received shelter support	Number of OVC who received shelter support
		Total number of OVC who are in need of the support
72.	Proportion of OVC who received IGA support	Number of OVC who received IGA support
		Total number of OVC who are in need of the support
73.	Proportion of PLHIV aged 15-59 years of age who have received food support	Number of PLHIV aged 15-59 years of age who have received food support

		Total number of PLHIV 15 -59 years of age who are in need of the support
74.	Proportion of PLHIV aged 15-59 years of age who have received shelter support	Number of PLHIV aged 15-59 years of age who have received shelter support
		Total number of PLHIV 15 -59 years of age who are in need of the support
75.	Proportion of PLHIV aged 15 -59 years of age who received IGA support	Number of PLHIV aged 15-59 years of age who received IGA support
		Total number of PLHIV 15 -59 years of age who are in need of the support
76.	Proportion of Commercial sex workers (CSW) who are engaged in IGA	Number of CSW who are engaged in IGA
		Total number of CSW
77.	Proportion of school with HIV/AIDS prevention and control interventions	Number of school with HIV/AIDS prevention and control interventions
		Total number of schools (Public and Private)
78.	Proportion of organization (public & Private) mainstreamed HIV/AIDS	Number of organization mainstreamed HIV/AIDS
		Total number of government and other organizations
2.6. Prevention and control of Tuberculosis/Leprosy		
79.	Proportion of Smear Positive TB cases detected	Number of new smear Positive TB cases detected
		Estimated number of new Smear-Positive TB cases
80.	TB treatment success rate	Number of new smear positive TB cases who are cured + number completed TB treatment
		Total number of new smear positive TB cases registered in the same period
81.	TB Cure rate	Number of new smear Positive TB cases who are cured as demonstrated by bacteriologic evidence
		Total number of new smear positive TB cases registered in the same period
82.	Proportion of newly diagnosed TB patients (all Forms) tested for HIV	Number of newly diagnosed TB patients (all forms) tested for HIV
		Total number of new TB cases (all forms) enrolled in the same period
83.	Proportion of health posts providing DOTS/MDT	Cumulative number of health posts providing DOTS/MDT
		Total number of available health posts
84.	TB-HIV Co- infection rate	Number of TB cases (all forms) found HIV positive
		Total number of all forms of TB cases registered and tested in a given year
85.	Proportion of new Multi bacillary leprosy cases detected	Number of new Multi bacillary leprosy cases detected
		Total number of expected Multi bacillary leprosy cases
86.	Proportion of newly registered multi bacillary cases completed their treatment	Number of newly registered multi bacillary cases completed their treatment
		Total number of new multi bacillary cases registered in the same period
87.	Grade II disability rate among new cases of leprosy	Number of new leprosy cases with disability grade II at the time of diagnosis
		Total number of new leprosy cases detected during the specified period
2.7. Prevention and control of Malaria		
88.	Previously malarious kebeles reporting no monthly malaria cases for 24 months	Number of previously malarious Kebele's (the existence of lab-confirmed malaria cases the previous year from HMIS) with no lab-confirmed (including RDT) malaria cases due to local transmission in a 24 month period
		Total number of malarious Kebeles within a target area

89.	Proportion of laboratory-confirmed malaria deaths seen in health centers	Number of deaths due to laboratory confirmed malaria
		Total number of laboratory confirmed malaria cases in the health centers
90.	Proportion of households in targeted village received at least 2 LLNs	Number of households in targeted village received at least 2 LLNs
		Total number of households in targeted villages
91.	Proportion of pregnant women who slept under LLNs	Number of pregnant women who slept under an LLNs the previous night
		Total number of pregnant women
92.	Proportion of under five children who slept under LLNs	Number of under five children who slept under an LLNs the previous night
		Total number of under five children
93.	Proportion of households in malarious areas covered with Indoor residual sprayed (IRS)	Number of households in malarious areas covered with IRS
		Total number of household in malarious areas
2.8. Prevention & Control of Other Communicable Diseases		
94.	Proportion of active trachoma cases treated	Number of active trachoma cases treated
		Expected number of active trachoma cases
95.	Proportion of Leishmaniasis cases treated	Number of Leishmaniasis cases treated
		Expected number of Leishmaniasis cases
96.	Proportion of Onchocerciasis cases treated	Number of Onchocerciasis cases treated
		Expected number of Onchocerciasis cases
2.9. Prevention & Control of Non-Communicable Diseases		
97.	Proportion treated hypertensive patients	Number of people who are treated for their high blood pressure
		Number of people with high blood pressure
98.	Proportion of health centers providing integrated mental health services	Number of health centers providing integrated mental health services
		Total number of health centers
99.	Cataract surgical rate (CSR)	Number of cataract surgeries performed
		Total number of expected cataract cases
2.10. Public Health Emergency Management		
100.	Number of epidemics occurred	
101.	Proportion epidemics that have been reported wit in 24 hours	Number of epidemics that have been detected and reported within 24 hours
		Total number of epidemics occurred
102.	Proportion of epidemics that have been responded within 48 hours	Number of epidemics that have been detected and responded within 48 hours
		Total number of epidemics occurred
2.11. Facility Service Utilization		
103.	OPD attendance per capita	Total number of outpatient visit [including first and repeat visits]
		Total Population in the woreda
3. Expansion and strengthening of Health Infrastructure and Resource		
3.1. Expansion of primary health care facilities		
104.	Proportion of rural kebeles with at least one HP	Cumulative number of rural kebeles with at least one HP
		Total number of rural kebeles
105.	Number of newly constructed Health posts fully equipped	
106.	Proportion of constructed health centers	Total number of available health centers
		Required number of health centers as per the standard
107.	Number of newly constructed health centers fully equipped	

108.	Number of newly constructed health centers furnished	
3.2. Hospital Infrastructure		
3.3. Human Resource		
109.	Proportion of available HEWs in rural kebeles	Cumulative number of HEWs deployed in rural kebeles
		Total number of required HEWS as per the standard (2HEWs per rural kebeles)
110.	Proportion of Urban HEWs deployed in urban kebeles/sub-cities	Cumulative number of urban HEWs deployed in urban kebeles/sub-cities
		Total number of required HEWS as per the standard (1 HEWs per 500HHs)
111.	Proportion of HEWs trained with IRT for at least 20 days in a year	Number of HEWs trained with IRT for at least 20 days in a year
		Total number of HEWs currently providing service
112.	Proportion of Voluntary community health workers (VCHW)	Cumulative number innovators selected from graduated model HHs and trained as VCHW
		Required number of VCHWs as per the standard (2 VCHWs for every 50 HHs)
113.	Proportion of health centers with at least one health officer	Number of health centers with at least one health officer
		Total number of available health centers
114.	Proportion of health centers with at least one midwife	Number of health centers with at least one midwife
		Total number of available health centers
3.4. Pharmaceutical and medical equipments		
115.	Proportion of months with availability of essential drugs in health posts	Sum of months with drug availability in all health posts
		Total number of months in the given period of time *Total number of tracer drugs *total number of functional health post
116.	Proportion of months with availability of essential drugs in health centers	Sum of months with drug availability in all health centers
		Total number of months in the given period of time *Total number of tracer drugs *Total number of functional health centers
3.5. Health care Financing		
117.	Proportion of households enrolled in Community based health Insurance (CBHI) schemes	Number of households enrolled in CBHI schemes
		Total number of households
118.	Proportion of health centers implementing revenue retention and utilization	Number of health facilities implementing revenue retention and utilization
		Total number of health centers
119.	Proportion of health centers fully reimbursed for waiver in the planning period	Number of health centers fully reimbursed for waiver
		Total number of health centers
120.	Proportion of health centers that provide standardized exempted services	Number of health centers that provide standardized exempted services
		Total number of health centers
3.6. Information Communication Technology		
121.	Proportion of health centers implemented Electronic Medical Record (EMR)	Number of health centers implemented EMR
		Total number of health centers
122.	Proportion of health institutions implemented electronic-HMIS	Number of health institution implemented e-HMIS
		Total number of health institution

Annex 3: HSDP Core Performance Indicators and Targets[13]

Priority Area	Impact	Outcome	Vehicles	Bloodlines
Maternal and Newborn Health	MMR 267/100,00	CPR = 66% Deliveries attended by skilled birth attendants = 62%	Health Post 1:5,000 population Health Center 1:25,000 population Primary Hospital 1:100,000 population General Hospital 1:1,000,000 population Referral Hospital 1:5,000,000 population	Health Extension Program Supply chain management Regulatory system Harmonization and Alignment Health Care Financing Human Resource Development Health Information System Continuous quality improvement program Referral system
Child Health	U_5MR 68/1000 IMR 31/1000	Fully immunized = 90% Pneumonia treatment 81%		
HIV/AIDS	HIV incidence 0.14	ART = 484,966 PMTCT = 77%		
TB	Mortality due to all forms of TB = 20/100,000	TB Case detection 75%		
Malaria	Lab confirmed Malaria incidence <5 per 1000	Pregnant women who slept under LLIN the previous night = 86% Under five who slept under LLIN the previous night = 86%		
Nutrition	Wasting prevalence 3%			

Annex 4: How to prepare the charts for monitoring achieved and planned immunization and reproductive health coverage

(Ref. HMIS Technical Standards Area 4 Version 1)

The detailed instructions below show how to prepare a chart for monitoring vaccine doses given, coverage and dropout for immunization. The same principles can be used to monitor maternal services and coverage.

The immunization chart has been developed to track the monthly progress you are making towards immunizing surviving infants less than one year of age each month and throughout the year. Coverage for several antigens can be plotted on the same graph. This reduces paperwork and lets you easily compare achievement for these antigens. A single chart also helps you to determine whether your target population is completing the series of vaccines (e.g. all the way through measles) or dropping out.

In Ethiopia, health workers already use this type of chart to monitor DPT1 – DPT3 dropout. DPT3 coverage in many places has risen above the national standard of 80%. When DPT3 coverage rises to this level, experts agree that monitoring DPT1 – DPT3 dropout is less useful because it is certain to be low (below 20%). Therefore, in the example shown here, the same principles are applied to monitor both coverage and dropout for DPT3 and measles. Both of these immunizations are important national priorities: DPT3 is both an HSDPIII and PASDEP indicator, and measles is both an HSDPIII and MDG indicator. There is also a tendency for dropouts between DPT3 and measles because of the time gap between the scheduled times for these immunizations.

1. **Calculate the annual and monthly target population** to receive immunization services.

    a) *Annual target population*

    You should aim to reach every infant in your catchment area[22], especially those who are hard to reach. Use existing population figures for surviving infants under one year of age obtained via the regional or woreda statistics departments or from the WorHO. These population figures come from census data of the Central Statistical Authority (CSA).[23]

    b) *Monthly target*

    To get a monthly target population, divide the number of surviving infants under one year of age by 12 (If annual target under one year is 156, monthly target is 156/12 = 13).

2. **Label the chart.** Complete the information on the top of the chart, i.e. area and year. Label the left and right side of the chart with the monthly target figures. Label the boxes at the bottom with the name of the vaccine and dose, e.g. DTP3 and measles, as shown in Section 3.1.2.

[22] The catchment area is based on administrative areas. There may be geographic barriers, transport facilities, etc that result in persons using a facility in a different catchment area. This may result in an effective catchment population that is less than or greater than the administrative area's population. It is likely that these variations would have a significant effect on the effective catchment population except perhaps in a few areas.

[23] If you do not have these numbers, obtain an estimate by multiplying the total population times 4%. This document uses 4% as the estimated percentage of infants less than one year of age and of pregnant women in a population. If you have a more precise percentage for your catchment area, use this number instead. (If the total population is 3900 then infants under one year would be 3900 x 4/100 = 156).

3. Draw a **diagonal line from zero to the top right-hand corner to show the ideal rate of progress** if every infant is immunized on time.

4. **Plot immunization data on the chart.** The chart can be used to monitor doses given, coverage, and dropout rates. The chart in Section 3.1.2 uses DTP3 and measles, but other rates can be used (e.g. DTP1, DPT3, and measles).

a) Locate the row of boxes underneath the graph. Locate the spaces for the month you are recording. Enter the monthly total of DTP3 immunization given.

b) Add the current month's total to the previous cumulative[24] total to calculate the current cumulative total and enter it on the right side of the month column you are recording.

c) Make a dot on the graph for the cumulative total recorded on the right side of the month column you are recording.

d) Connect the new dot to the previous month's dot with a straight line.

e) Repeat above (a to d) every month until the end of the year.

f) Plot measles immunizations given in the same way as DTP3 (follow steps a to e).

5. Calculate the total number of dropouts between DTP3 and measles (DO%).

– Subtract the cumulative total for measles from the cumulative total for DTP3.

6. Calculate the cumulative dropout rate (DO%) as follows:

$$\text{DO\%} = \frac{\text{DTP3 cumulative total minus measles cumulative total}}{\text{DTP3 cumulative total}} x100$$

The dropout rate can be easily visually monitored: it is the gap between the line of DTP3 and of measles.

These instructions can easily be extended to reproductive health services. The target population in Step 1 is the expected number of pregnancies. The number of ANC first visits and deliveries attended by skilled attendant (for HP chart)

[24] Cumulative means the total number of doses of vaccines given in the current month plus the monthly totals for all the previous months. Use the same time period for each dose and vaccine. For example, the cumulative number of DTP3 doses given by the end of March is the total number of doses given in January plus the total number given in February plus the total number given in March.

Annex 5: Monthly Immunization Coverage Monitoring Charts

(Ref. HMIS Technical Standards Area 4 Version 1)

HMIS / M&E HEALTH INSTITUTION MONTHLY MONITORING CHART
IMMUNIZATION
Immunisation Monitoring Chart

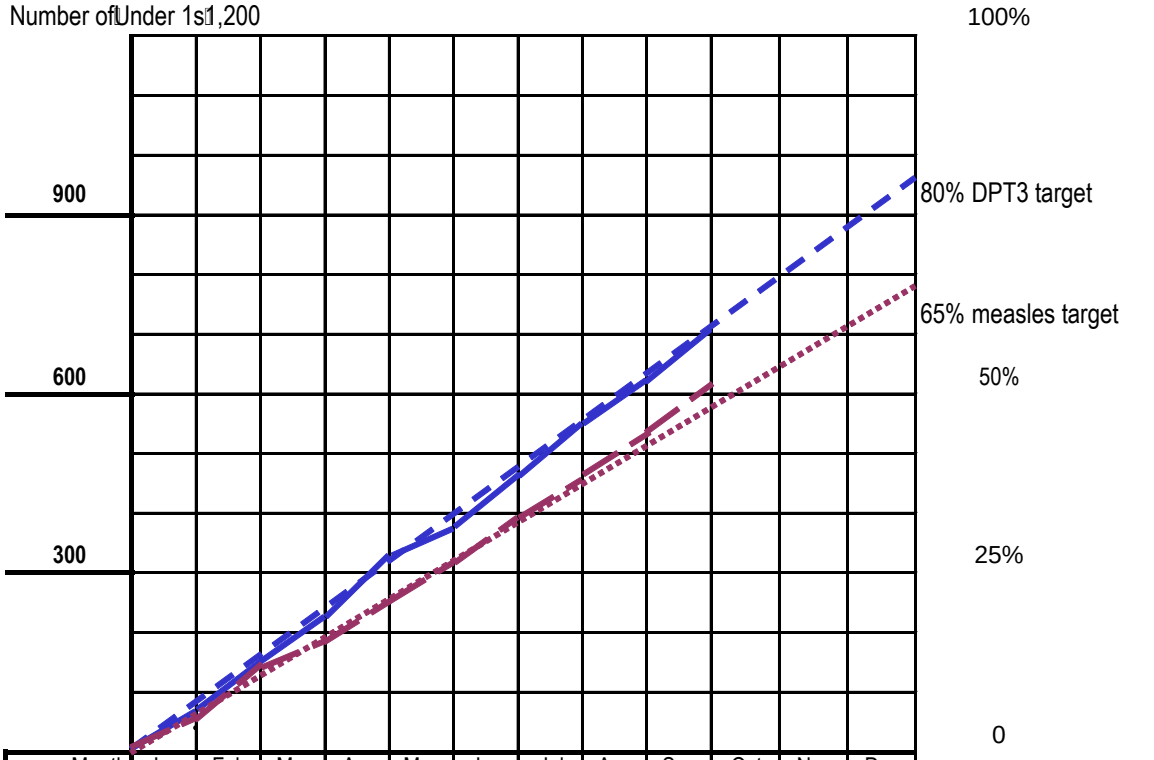
Health Institution: Erehwon Health Center Year: 2020

Woreda: Erehwon

Catchment Area Population: 40,000

Surviving Infants Catchment Area Population: 1,200

DPT3 target: 960 (80%) Measles target: 780 (65%)



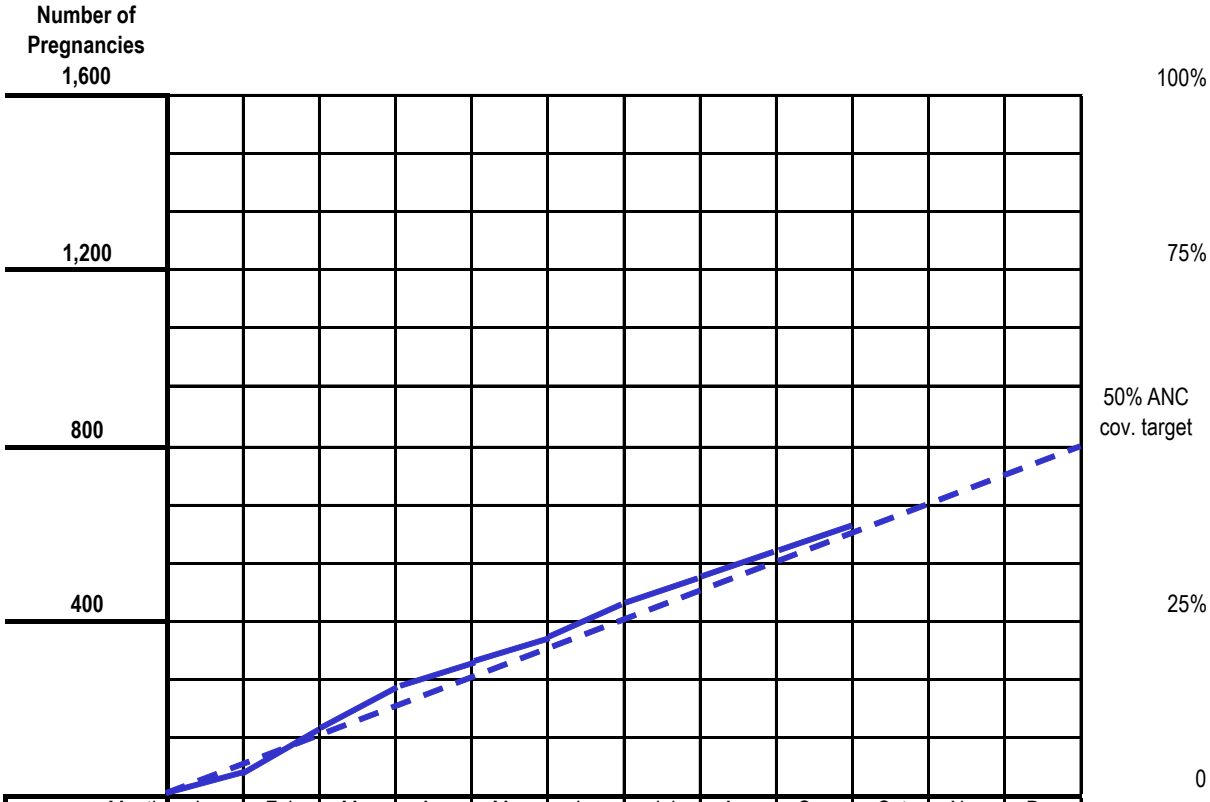
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	100	200	300	400	500	600	700	800	900	1000	1100	1200	Cumulative eligibles
Vaccine	73	81	77	83	75	71	80	79	86				Immun in month
DPT3	73	154	231	314	389	460	540	619	705				Cumulative in month
cum cov	73%	77%	77%	79%	78%	77%	77%	77%	78%				
Vaccine	64	71	56	62	66	74	63	70	77				Immun in month
Measles	64	135	191	253	319	393	456	526	603				Cumulative in month
cum cov	64%	68%	64%	63%	64%	66%	65%	66%	67%				

Annex 6: Monthly Reproductive Health Coverage Monitoring Chart

(Ref. HMIS Technical Standards Area 4 Version 1)

HMIS / M&E HEALTH INSTITUTION MONTHLY MONITORING Chart
REPRODUCTIVE HEALTH
Antenatal Care Monitoring

Health Institution: Erehwon Health Center Year: 2020
Woreda: Erehwon
Catchment Area Population: 40,000
Expected Pregnancies: 1,600
Target for Year: 800 (50%)



Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
eligibles	133	267	400	533	667	800	933	1,067	1,200	1,333	1,467	1,600
new ANC attendances	60	76	80	66	59	65	72	74	62			
cum new attendances	60	136	216	282	341	406	478	552	614			
cum cov	45%	51%	54%	53%	51%	51%	51%	52%	51%			
achieve vs plan in month	90%	102%	108%	106%	102%	102%	102%	104%	102%			

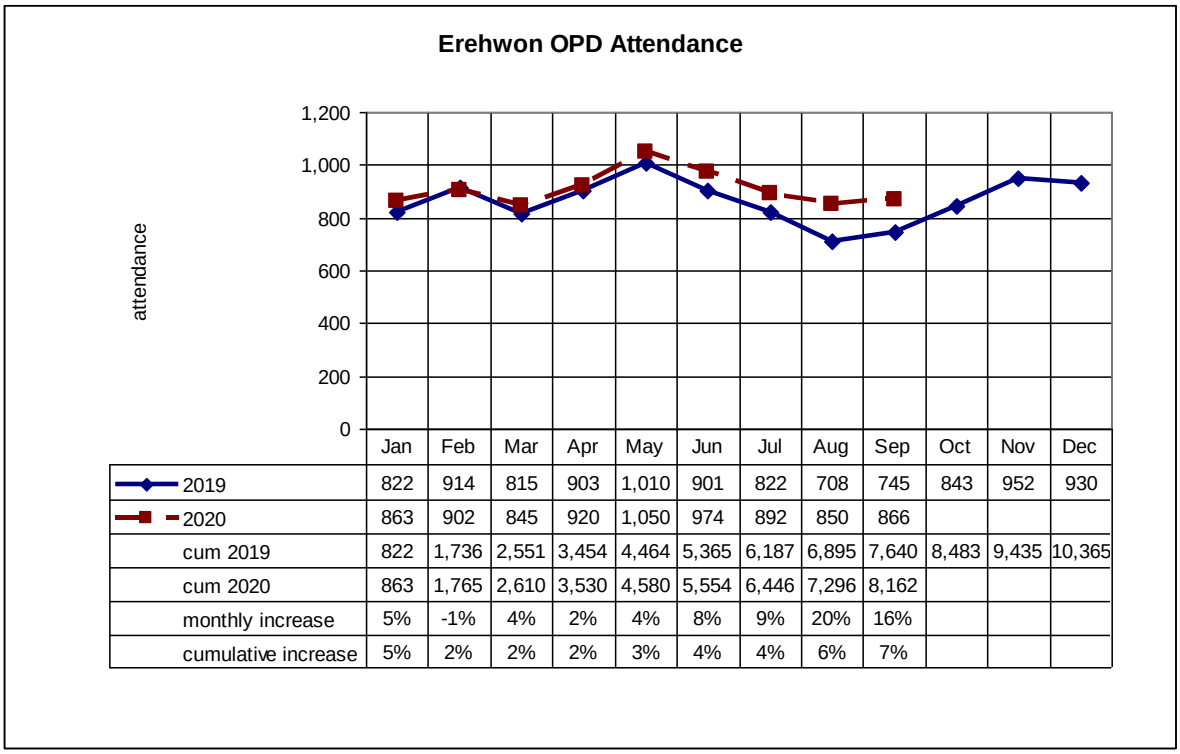
Annex 7: Making and using charts to compare current year with previous years

(Ref. HMIS Technical Standards Area 4 Version 1)

Disease cases and utilization are often monitored by comparing the current year's indicators with the previous year. Line charts are often used for this purpose because it is easy to see when the gap between the two years narrows and expands. The example included here shows the monthly values and the proportional change between the two years. Similar charts can be made for other utilization statistics and for diseases.

Monthly Outpatient Department Attendance Monitoring Chart

HMIS / M&E HEALTH INSTITUTION OPD MONTHLY MONITORING CHART



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	822	914	815	903	1,010	901	822	708	745	843	952	930
2020	863	902	845	920	1,050	974	892	850	866			
cum 2019	822	1,736	2,551	3,454	4,464	5,365	6,187	6,895	7,640	8,483	9,435	10,365
cum 2020	863	1,765	2,610	3,530	4,580	5,554	6,446	7,296	8,162			
monthly increase	5%	-1%	4%	2%	4%	8%	9%	20%	16%			
cumulative increase	5%	2%	2%	2%	3%	4%	4%	6%	7%			

Annex 8: Data Display Formats at Health Posts

Table: Kebele Demographic Information Compilation Format[25]

	Kebele demographic Information	Number
1.1	Total population	
1.2	Female population	
1.3	Male population	
1.4	Total number of households	
1.5	Total number of under 6 months of age infants	
1.6	Total number of under 1 year of age infants	
1.7	Total number of under 3 years of age children	
1.8	Total number of under 5 years of age children	
1.9	Total number of reproductive age (15-49 yrs) women	
1.10	Total number of live births in the previous year	
1.11	Total number of deaths in the previous year	

Table: Kebele Environmental Sanitation Information Compilation Format

	Kebele Environmental Sanitation Information	Number
3.1	Total number of household with latrine	
3.2	Total number of households with liquid waste disposal sites	
3.3	Total number of households with solid waste disposal sites	
3.4	Total number of households with protected solid waste disposal site	
3.5	Total number of households using wells as source of drinking water	
3.6	Total number of households using spring water as source of drinking water	
3.7	Total number of households using tap water as source of drinking water	
3.8	Total number of households with any hand washing facility but **without**	

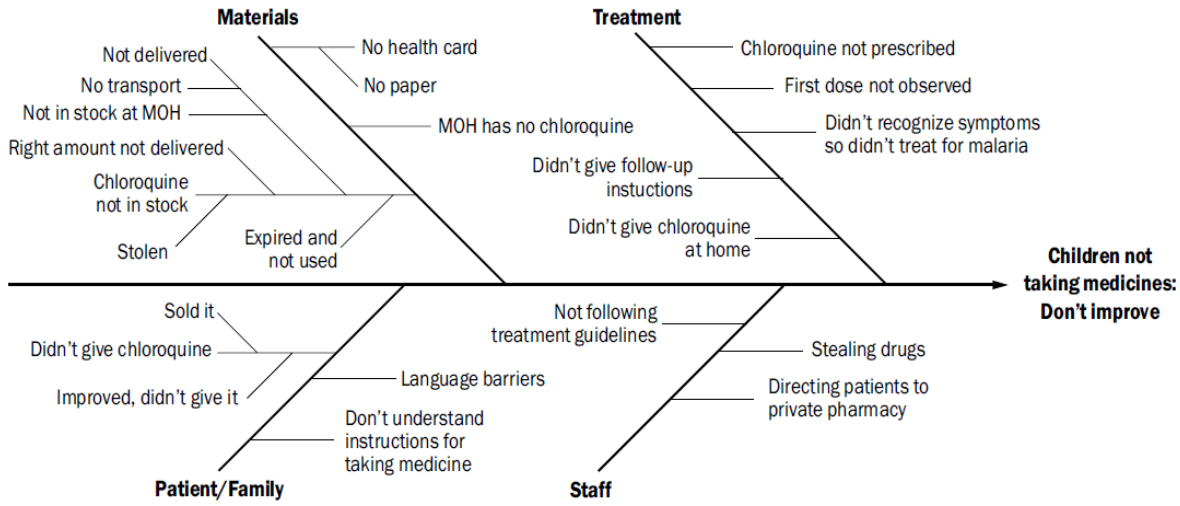
[25] Federal Ministry of Health, Ethiopia: Community Health Information System Data Recording and Reporting – User's Manual 2011

	soap/ash	
3.9	Total number of households with any hand washing facility but **with** soap/ash	
3.10	Total number of households with at least one LLITN available in the house	

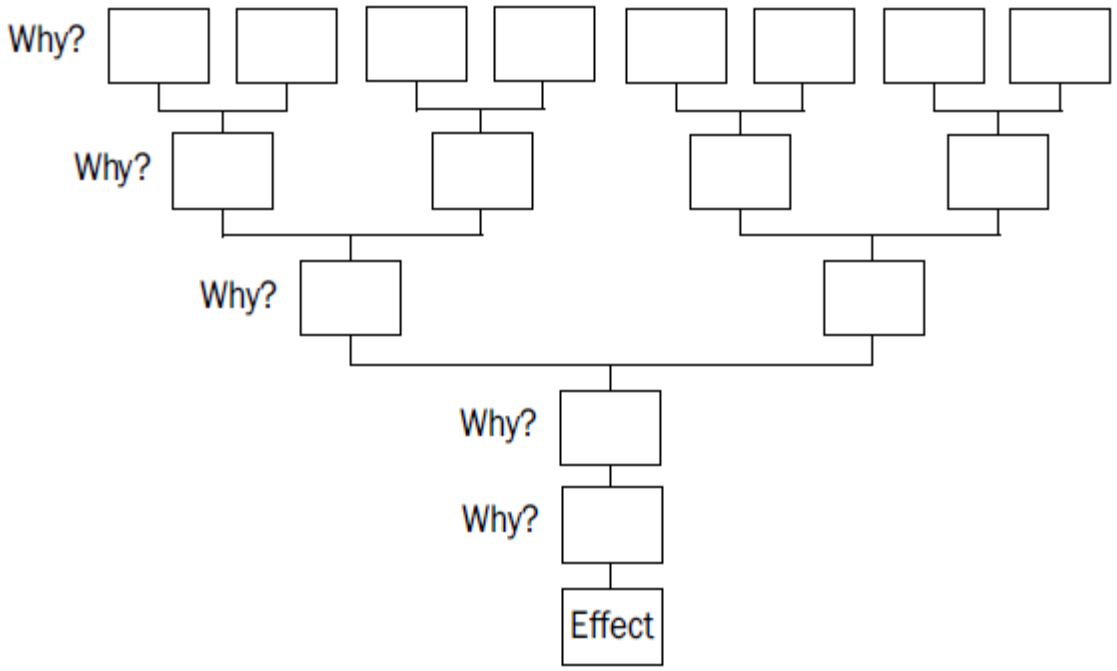
Table: Kebele Basic Health Indicators Compilation Format

	Kebele Basic health Indicators Month/Year:_____ to Month/Year:_____	Number	Percentage
4.1	Number of under 1 year aged children received first dose of pentavalent vaccine		
4.2	Number of under 1 year aged children received measles vaccine		
4.3	Number of reproductive aged women (15-49 years) using Family Planning methods		
4.4	Number of pregnant women received first antenatal care		
4.5	Number of deliveries assisted by HEW		
4.6	Number of OPD attendance		
4.7	Number of cases of Malaria		
4.8	Number of cases of Pneumonia in <5 children		
4.9	Number of households with LLITN		
4.10	Number of households with Indoor Residual Spraying (IRS)		

Annex 9: Fishbone Diagram of Possible Root Causes of Why Children with Malaria not Improving[19]



Annex 10: A (Problem) Tree Diagram[19]



Section II: HMIS Information Use at the time of Client/Patient – Provider interaction

1. Family Planning Register for Health Centers & Hospitals

Properly filling the columns of the Family Planning register reminds the service provider to ensure quality of care.

Column 12: should only be ticked if proper and complete counseling on FP methods, their benefits and risks/contraindications have been communicated to the client. This will assure informed choice of FP method by the client.

Column 13-18: will help in ensuring screening for STI/HIV and providing relevant counseling accordingly.

Column 20-21: helps to prompt the service provider to exclude contraindications for hormonal methods and IUD, if any of them is the method of choice.

Column 25-27: help in following-up the appearance of any side-effects, especially high blood pressure or excessive weight gain.

Column 24 & 30: comparing the dates between Column 24 and Column 30 will help in identifying if any dose or cycle is overdue and, therefore, the client's status needs re-assessment.

2. Integrated Antenatal, Labor, Delivery, Newborn and Postnatal Card & the Antenatal Care, Delivery and Postnatal Care Registers

In the Health Center and Hospitals, the Antenatal Care Register, Delivery Register and Postnatal Care Register are used in conjunction with the Integrated Antenatal, Labor, Delivery, Newborn and Postnatal Card.

At the Health Posts, the HEW uses the integrated Antenatal, Labor, Delivery, Newborn and Postnatal Card for recording maternal services data.

The two cards, one used at Hospital/Health center and the other used at Health Posts are different in their contents, but the basic intent for both the cards is to record the essential findings and services provided during pregnancy, labor and post-partum. At Hospital/health Center, the integrated card is kept within the Individual Folder which is filed in the Card Room; at Health Post, the integrated card is kept within the Family Folder.

Integrated Antenatal, Labor, Delivery, Newborn and Postnatal Card (for Hospitals and Health Centers)

This card has five sections and comes with one Classifying Form and a Postpartum Follow-up sheet.

SECTION I: The Classifying Form.

The Classifying Form is used to classify a pregnant women's eligibility for Basic Care or Specialty Care. At the time of first contact with a pregnant woman this Classifying Form is used to rule out the presence of certain obstetric, gynecological and medical conditions or history that will necessitate the woman to be seen by a specialist.

If the pregnant woman is eligible for Basic component of the antenatal care model, then the antenatal check-up and service data is recorded on the Integrated Card.

SECTION II: FOCUSED ANC FOLLOW-UP – BASIC CARE COMPONENT

This section has four parts:

1. Assessment
2. Preventive Care
3. HIV Prevention, Care & Treatment
4. Counseling/Advice

The Assessment section helps to record the assessment findings according to the weeks of pregnancy. Four visits are encouraged. Filling this section also helps in counseling the pregnant woman on timings of next ANC visits.

This part is helpful in following up the intrauterine growth of the fetus by assessing the Gestational Age against LMP and EDD. The Fetal Heart Beat helps to identify the viability of the fetus.

Mother's condition is assessed with the help of blood pressure measurement, weight gain, hemoglobin and fasting blood sugar levels.

The Preventive Care part helps to remind the service provider to provide preventive services like TT vaccination, vitamin A and Mebendazole, and to check for availability/use of ITN by the pregnant woman.

The Counseling part should only be ticked if the pregnant woman and/or her family have been counseled on the Birth Preparedness Plan and the Danger Signs in pregnancy.

In case there is specialized care necessary as identified by using the Classifying Form, there is another part for recording the "Specialty Care Follow-up Note". For subsequent visits requiring specialty care, additional sheets are added to the card to keep the specialty follow-up notes.

SECTION III: DELIVERY SERVICES

This section has five parts:

1. Monitoring Progress of Labor in Health Facilities (using Partograph)
2. HIV counseling & Testing
3. HIV+ care and follow-up
4. Delivery information, if delivered at the facility
5. Referral information, if laboring mother is referred

The partograph is a simple tool for monitoring the progress of the stages of labor. It helps to identify prolonged/obstructed labor and helps the service provider to decide when to take appropriate action according to the management protocol established at that particular health facility.

Progress of labor is monitored by plotting cervical dilatation, decent of fetal head and uterine contractions. The fetal condition is monitored by plotting the fetal heart rate, membranes and liquor, and molding of the fetal skull. Maternal condition is monitored by plotting pulse, blood pressure, temperature etc.

Monitoring the above parameters plotted on the partograph helps the skilled birth attendant decide on when to intervene.

SECTION IV: POSTPARTUM FOLLOW-UP SHEET for mothers who delivered at the health facility

This sheet is used for postpartum follow-up from immediately after birth till 24hours. It is particularly useful for monitoring immediate postpartum complications like postpartum bleeding, neonatal hypoxia and APGAR score.

SECTION V: POSTPARTUM FOLLOW-UP VISITS

This section is for recording the postnatal examination findings at the time of discharge from the health facility or after home delivery and on the 6th day and the 6th week postpartum.

This section is useful for identifying postpartum complications like infections and early detection of urinary or fecal incontinence. This section also helps in providing preventive services to the mother and the newborn.

The Antenatal Care Register, the Delivery Care Register and the Postnatal Care Register (for Hospitals and Health Centers)

The Antenatal Care Register, the Delivery Care Register and the Postnatal Care Register maintained at the Health center or Hospital go in conjunction with the Integrated Card. These registers are for recording those essential data elements that are required for aggregation for the purpose of monthly HMIS reporting.

USAID
FROM THE AMERICAN PEOPLE

Published with the support of USAID Ethiopia
HMIS Scale-up Project

MEASURE Evaluation

HMIS Scale-up Project
Implemented by John Snow Inc. (JSI)