# Assessment of Health Management Information System (HMIS) Performance in SNNPR, Ethiopia

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MEASURE Evaluation

MEASURE Evaluation is funded by the U.S. Agency for International Development (USAID) under terms of Cooperative Agreement GHA-A-00-08-00003-00 and is implemented by the Carolina Population Center, University of North Carolina at Chapel Hill in partnership with Futures Group, ICF International, John Snow, Inc., Management Sciences for Health, and Tulane University. The views expressed in this publication do not necessarily reflect the views of USAID or the United States government. April 2014, SR-14-87

*Photograph by Teemar Fisseha, research assistant, at an Ethiopian health post during a MEASURE Evaluation-George Washington University case study.*

# Contents

Executive Summary ..... i
1 Introduction ..... 1
2 Overview of HMIS scale-up in SNNPR ..... 2
3 PRISM Assessment Conceptual Framework ..... 3
4 Objectives ..... 4
4.1 Overall Objective ..... 4
4.2 Specific Objectives ..... 4
5 Survey Methodology ..... 4
6 Study Limitations ..... 5
7 Results ..... 6
7.1 Levels of HMIS Performance: Data quality and information use ..... 6
7.1.1 Data Accuracy at Health Facility ..... 6
7.1.2 Data Completeness ..... 7
7.1.3 Timeliness ..... 8
7.1.4 Data quality check ..... 8
7.1.5 Use of HMIS Information ..... 8
7.2 Determinants of HMIS Performance ..... 12
7.2.1 Behavioral Determinants ..... 12
7.2.1.1 Self-efficacy or Confidence Level for HMIS Tasks ..... 13
7.2.2 Organizational Determinants ..... 15
7.3 Focus Group Discussion Findings ..... 20
8 Discussion and Recommendations ..... 23

# Executive Summary

Since 2009 USAID/MEASURE Evaluation has been scaling-up the national Health Management Information System (HMIS) in Southern Nations, Nationalities and People's Region (SNNPR) of Ethiopia. By July 2011, 7 zones and 2 special woredas out of 15 zones and 7 special woredas in SNNPR were implementing the reformed HMIS.

In August 2011, assessment of the HMIS performance and its organizational, technical and behavioral determinants was conducted in a cluster of 2 zones & 1 special woreda. All the 3 zonal health departments (ZHD), 19 woreda health offices (WorHO) and 3 hospitals and a random sample of 31 health centers (HC) and 36 Health Posts (HP) were surveyed using the PRISM[1] tools; 229 health managers and staff from these institutions were interviewed. Focus group discussion (FGD) with key regional and zonal managers complemented the quantitative data.

Major strengths of the HMIS in SNNPR included reporting completeness and existence of functional performance review teams (PRT). Over 93% health facilities (HF) submitted completed HMIS reports; and 99% of the expected HF reports were available at the WorHOs. All (100%) WorHOs and HCs have functional PRTs. Of them, 79% WorHOs and 69% of HCs demonstrated use of HMIS for performance review. In terms of decision making, in the past 3 months, 37% WorHOs made decisions based on HMIS review.

Data display was in 100% ZHDs, 86% WorHOs, 84% HCs and 81% HPs. Over 94% ZHDs and 75% WorHOs but only 39% HFs demonstrated data analyses. All ZHDs, 95% WorHOs and all hospitals have computers and printers; however, only the ZHDs have access to computerized HMIS data.

Even though 65% HFs have had one or more supervisory visits in the past 3 months and data quality was checked in 59% HFs, only 10% HCs and HPs have institutionalized data quality checks. Variations in data accuracy levels were found across data elements and across health facility type. On average, data accuracy ranged between 62% and 17%. In the 14 WorHOs that had records of report receipt, 70% HF met the reporting timeline.

Hospital and HP respondents showed lower HMIS tasks competency (59% and 47% respectively) but higher confidence (75% and 76% respectively). The confidence levels of WorHO and HC respondents were 73% and 66% matching their competency levels of 73% and 60% respectively. Regarding promoting information culture, 58% HCs and 33% HPs used HMIS in their annual plans; 65% HCs and 28% HPs reported their in-charges attending performance review meeting at woreda level; and 23% HCs and 17% HPs reported receiving any directives on HMIS information use.

Thus, HMIS performance improvement challenges in SNNPR relate mostly to improving data accuracy, access to computerized HMIS data and competencies to analyze, interpret and use HMIS data at WorHO and HF levels.

Unavailability of printed HMIS materials, delays in updating the electronic database following reports submission to Regional Health Bureau and continuing existence of parallel reporting requirements were identified by the FGD participants as additional factors affecting HMIS performance.

[1] Performance of Routine Information System Management (PRISM)

This assessment provided in-sight into aspects of HMIS in SNNPR to be capitalized or needing serious attention. The findings serve as baseline for future comparisons to ascertain progress towards HMIS performance improvement.

# 1 Introduction

The Health Management Information System, Monitoring and Evaluation (HMIS/M&E) fits within the priorities set by the Ethiopian Health Sector Development Program's (HSDP) strategic plan. The Government of Ethiopia (GOE) emphasizes evidence-based decision making directed towards performance improvement and results-oriented management in all public sectors. Accordingly, the National HMIS Strategy identifies five critical strategic areas to strengthen and continuously improve HMIS/M&E. These are capacity building, standardization and integration of data collection and reporting, linkage between information sources, action oriented performance monitoring, and use of the appropriate technologies[2]. In line with these principles, in 2007 the Ministry of Health (MoH) launched a nationwide HMIS reform. As a result, a harmonized and standardized HMIS was developed as the primary source of information for evidence-based decision making and monitoring health sector performance[3].

Since September 2009 MEASURE Evaluation is supporting the Southern Nations, Nationalities and People's Region (SNNPR) of Ethiopia to scale up the HMIS reform via its USAID funded HMIS Scale-up (HMIS-SU) Project. SNNPR is one of the 11 regions of Ethiopia with over 16 million or 20% of the country's population. It has 15 zones and 7 special woredas. The HMIS SU Project is supporting a systems approach rolling out HMIS zone-by-zone. This was done to ensure that all the health institutions within one administrative unit, i.e. a zone, are becoming primed to one standardized HMIS reporting. The project promotes regional ownership and facilitates the RHB to take a leadership role in assuring the proper utilization of HMIS instruments, establishing functional data quality assurance mechanisms and institutionalizing performance review teams (PRT). The project also introduced and continues to assist the RHB in maintaining an electronic application - the eHMIS for HMIS data entry, aggregation, analysis and dissemination. By July 2011, seven zones and two special woredas were implementing the reformed HMIS.

As part of the ongoing effort to scale up HMIS reform, the Regional Bureau of Health (RHB) of SNNPR in collaboration with the MEASURE Evaluation HMIS Scale-up team planned to enhance efforts for strengthening HMIS performance in the zones. The Zonal HMIS Performance Strengthening Plan is implemented in four phases: (1) zonal HMIS performance assessment; (2) developing a HMIS strengthening action plan; (3) implement HMIS strengthening interventions, and (4) routine monitoring of the HMIS performance to measure the effect of the interventions.

In August 2011, the first round of the zonal HMIS performance assessment was conducted in a cluster of zones (viz. Hadiya and Kambata Tembaro) and special woreda (Halaba) who were implementing the reformed HMIS since mid or late 2010. The assessment was based on the Performance of Routine Information System Management (PRISM) framework. This framework promotes strengthening of the HMIS performance i.e. better data quality and improved information use by addressing technical, organizational and behavioral factors affecting HMIS data quality and use for health service performance improvement.

This document reports on the assessment findings that serve as a basis for formulating interventions to improve the HMIS performance and as a baseline for future monitoring of HMIS performance improvement in the zones. Additionally, lessons learned from this assessment will further inform needed modifications and/or adaptations of the HMIS performance assessment tools to be used for assessments in the remaining zones of SNNPR.

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[2] FMOH HMIS/M&E Strategic Plan for Ethiopia Health Sector, January 2008

[3] Editorial: Federal Ministry of Health Quarterly Health Bulletin Vol. 3 No. 1, Jan 2010.

# 2 Overview of HMIS scale-up in SNNPR

The HMIS reform in Ethiopia focused on rationalizing and standardizing indicators, data collection and reporting forms and procedures, and institutionalizing HMIS data quality assurance and information use mechanisms. For a uniform implementation of HMIS, prerequisites were set by FMOH to scaling-up HMIS in any region; the RHB were made responsible to renovate Medical Card Unit (MRU), provide Master Patient Index (MPI) boxes, shelves for filing Individual folders at MRUs, recruit full-time salaried HMIS focal persons, hire and train Health Information Technicians (HIT) and put appropriate number of staff in the MRU (card room). The FMOH took the responsibility to print and provide HMIS instruments and to provide funds for training health staff in the HFs.

Throughout the country the pace of training of health staff and scaling-up of the reformed HMIS was not encouraging. In this situation, FMOH through USAID invited JSI/MEASURE Evaluation to support the scaling-up of the reformed HMIS in SNNPR. The support includes promoting regional ownership and building capacity, fostering mentorship and supportive supervision, encouraging broad based partnership and enhancing IT support. SNNP RHB encouraged all the health institutions in the region to assign HMIS focal persons from the existing staff and mobilized partners for arranging boxes, shelves for MRUs and printed HMIS instruments.

In SNNPR, reports generated by the HFs are sent to the respective WorHO who transmit them to RHB through the respective ZHD. Once at RHB, the monthly HMIS report data are entered electronically in the electronic application, the eHMIS, using Intelligent Character Recognition (ICR) technology. As soon as data is entered into eHMIS and data quality check is performed, the HMIS data becomes available to all the ZHDs through wireless connections using CDMA. The ZHDs can download the data and use the various applications of eHMIS for reviewing and analyzing HMIS reports. However, till July 2011 the WorHOs did not have access to eHMIS and in order to fulfill the reporting requirement to the Woreda councils, they were using spreadsheet to do parallel data entry and aggregation.

At Health Posts level, SNNPR was the first among all the regions where the Family Folder was scaled-up as the community based information component of the reformed HMIS.

The SNNP RHB adopted a participatory training model whereby training of trainers were provided to the staff from RHB, ZHDs and WoHOs to create a pool of trained local facilitators in the region. The training of regional, zonal and woreda health managers and Health Facility (HF) staff was focused on building skills on record keeping and reporting, data quality assurance and HMIS information use. Along with the trainings, measures were taken to strengthen supportive supervisions to improve overall performance of HMIS, particularly the knowledge of HF staff regarding HMIS instruments and data quality.

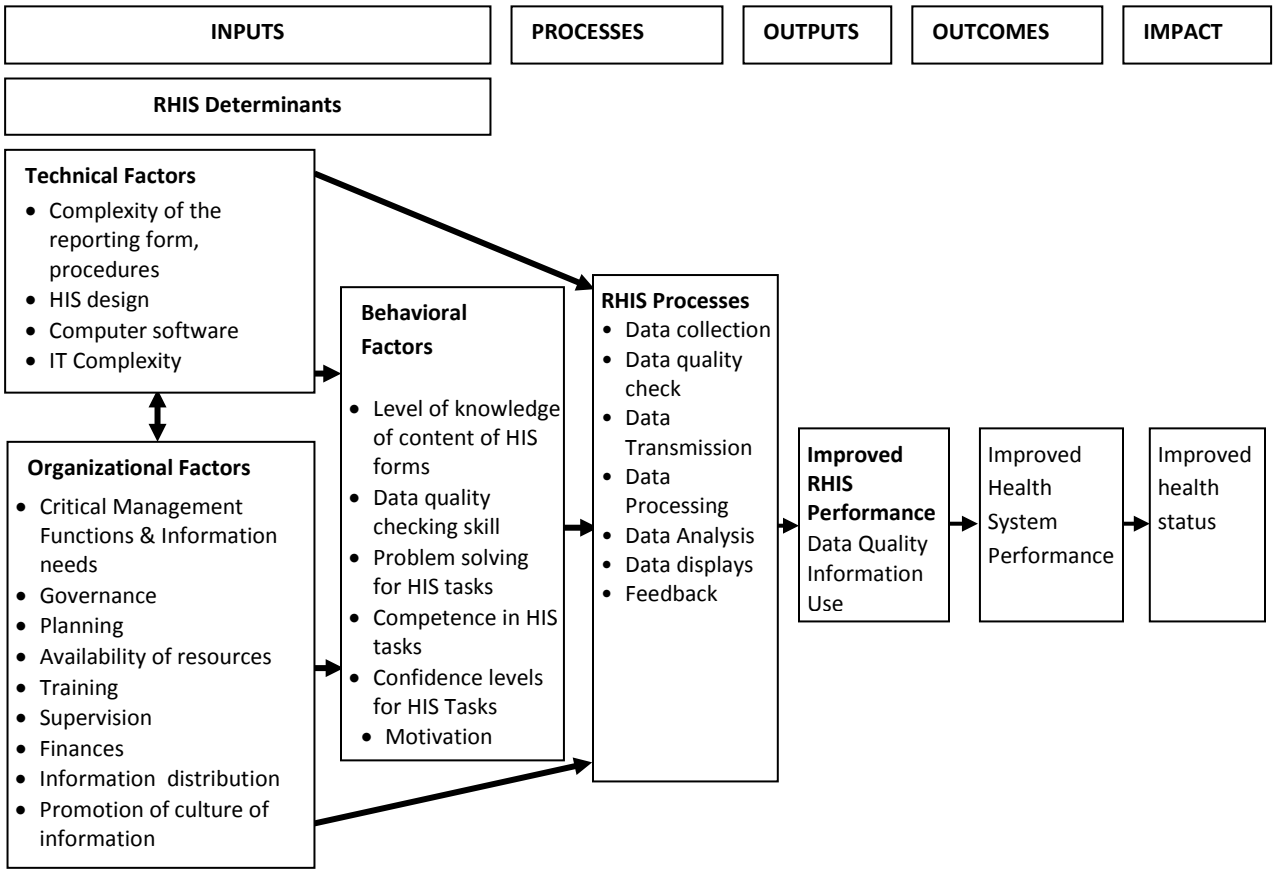
Simplification, standardization and harmonization are the core principles of the new HMIS. However, parallel recording and reporting instruments for different services at all levels are still in use. For instance, TB record book, PMTCT register, VCT register, outpatient therapeutic program (OTP) cards and community conversation (CC) record book are in use in the health posts. Separate weekly, monthly and quarterly reports are submitted based on these records to higher level. The use of these parallel recording and reporting instruments is mainly determined by the needs of specific programs whose information needs may in turn be driven by donor reporting requirements. This situation is not unique to SNNPR and is seen as putting additional data burden on the health staff, compromising data quality and creating a huge administrative burden.

# 3 PRISM Assessment Conceptual Framework

The Performance of Routine Information System Management (PRISM) Framework (Fig. 1) defines the various components of the routine health information system and their linkages to produce better quality data and continuous use of information, leading to better health system performance and, consequently, better health outcomes. The PRISM framework asserts that Routine Health Information System (RHIS) performance (better quality data and continuous use of information) is a function of better RHIS processes and their behavioral, technical, and organizational determinants[4]. The PRISM framework is founded on a 'systems approach' and continuous performance improvement principles.

The assessment carried out in SNNPR is based on this PRISM framework which consists of tools to assess Routine Health Information System (RHIS) performance, identify technical, behavioral and organizational factors that affect Routine Health Information Systems, aid in designing priority interventions to improve performance, and improve quality and use of routine health data[5].

**Figure 1: PRISM Framework**




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

[5] MEASURE Evaluation – PRISM: Performance of Routine Information System Management Framework (http://www.cpc.unc.edu/measure/tools/monitoring-evaluation-systems/prism)

# 4 Objectives

## 4.1 Overall Objective

- To create a baseline for HMIS performance and its determinants in SNNPR and thereby generate evidences for formulating interventions for improving HMIS performance in SNNPR

## 4.2 Specific Objectives

- Estimate the level of HMIS performance in three zones measured by data quality and use of information.
- Assess the behavioral, technical and organizational determinants affecting HMIS performance.
- Develop recommendations for interventions to strengthen the identified areas needing improvement.
- Build capacity of Regional Health Bureau and other Zonal Health Departments to conduct periodic HMIS performance assessment using PRISM tools.

# 5 Survey Methodology

The Regional Health Bureau has classified the 15 zones and 7 special woredas within SNNPR in 5 clusters for supervision purposes. These clusters are formed based on geographical proximity. In accord with this division, a phased approach is taken to conduct the zonal HMIS performance assessments in all the five clusters. The first phase of the assessment was conducted in the cluster that contains Hadiya Zone, Kembata Tembaro Zone and Halaba Special Woreda. Both quantitative and qualitative methods were used for the assessment.

A total of 3 hospitals, 76 HCs and 519 HPs were functional in the two zones and the special woreda at the time of the first assessment (Table 1).

**Table 1: Distribution of Health Facilities in the Three Zones/Special Woredas**

| Zone/Special Woreda | Health Posts | Health Centers | Hospitals |
|---|---|---|---|
| Hadiya | 312 | 42 | 1 |
| Kembata Tembaro | 131 | 27 | 1 |
| Halaba | 76 | 7 | 1 |
| Total | 519 | 76 | 3 |

Multiple sampling techniques were applied in this assessment. There are 19 WorHOs and 3 ZHDs in the cluster. These numbers were not sufficient for taking a sample. Therefore, all the 3 zone/special woreda health departments (ZHDs) and 19 WoHOs were included in the assessment. Similarly, all the 3 Hospitals were selected for the assessment.

For selecting Health Centers and Health Posts, the Lot Quality Assurance Sampling (LQAS) method was used to determine the sample size. Sixteen HMIS performance indicators were measured at facility level with an upper threshold of 90% and lower threshold of 60%. A decision value (d) of 6 health centers and an acceptable alpha value of 0.06 were set. On the basis of this information, sample size (n) was estimated by using LQAS sampling table. A plan with the sample size of twelve (n = 12) was used; this single-stage sampling plan accepted an alpha error of >15%. Accordingly, 12 health centers (HCs) from each zone were selected using the simple random sampling method.

However, in Halaba special woreda, where there are only 7 health centers, all of them were included in the facility sample. One health post (HP) attached to each sampled health center was randomly chosen for the health post level assessment. Some of the original sampling lots had to be re-selected due to factors out of our control. Inaccessibility of health facilities due to rain forced the team to replace 8% of the facilities initially selected. It was agreed to revisit the replaced health facilities during the dry season and compare their HMIS performance status with the results obtained in this assessment. Overall 36 HPs, 31 HCs and 3 hospitals were visited and 229 health staff comprised of HMIS Focal persons, Planning/M&E team members, Case Team coordinators, and heads of the selected health institutions were interviewed (Table 2)

**Table 2: Sample Size of Health Institutions Covered in the Study**

| Office/Facilities | Hadiya | Kembata Tembaro | Halaba | Total |
|---|---|---|---|---|
| Zone/Special Woreda Health Departments (ZHD) | 1 | 1 | 1 | 3 |
| Woreda Health Offices (WoHO) | 11 | 8 | - | 19 |
| Hospitals | 1 | 1 | 1 | 3 |
| Health Centers | 12 | 12 | 7 | 31 |
| Health Posts | 12 | 12 | 12 | 36 |
| Health Staff | 94 | 92 | 44 | 229 |

The interviewers were the HMIS Focal Persons and M&E staffs from all three zone/special woredas and the SNNPR-based staffs of HMIS Scale-up Project. Staffs from ZHDs were selected to assure ownership of the results and to build zonal capacity for subsequent follow-on assessments. ZHD staff and project staff were coupled together in teams to negate interviewer's bias. Two-day training was conducted for the interviewers in collaboration with the Planning/M&E unit of the SNNP RHB. During the training, the participants reviewed the draft questionnaire developed based on the generic PRISM assessment tools consisting of:

- HF, WorHO and ZHD level Diagnostic Tools for assessing data quality and information use
- Management Assessment Tool (MAT), and
- Organizational and Behavioral Assessment Tool (OBAT)

These questionnaires were adapted to SNNPR context in light of the reformed HMIS.

Qualitative data, collected through focus group discussion involving zonal HMIS officers and heads of policy and planning teams, were used mainly to enrich and explain the quantitative data. Quantitative data were analyzed using excel spreadsheet.

# 6 Study Limitations

PRISM questionnaires were modified for the assessment in the context of SNNPR and some questions were dropped. This made DEAT unsuitable for data entry and analysis. Consequently, an Excel spreadsheet was developed for data entry and analysis.

The questionnaires were in English. Even though intensive hand-on training was given to the data collectors who were from among the project staff as well as ZHD staff, the understanding of the questions among the data collectors was not always uniform. Similarly, many respondents,

especially those from the HFs, had difficulty in understanding and responding to the English version of the self-administered OBAT questionnaire. As a result some questions remained unanswered and were left blank. Thus, for analyzing each set of questions the sample size and the decision rule had to be adjusted according to the number of responses available.

# 7 Results

## *7.1 Levels of HMIS Performance: Data quality and information use*

### 7.1.1 Data Accuracy at Health Facility

Three data elements, viz. Repeat Contraceptive Acceptors, 3rd dose of Pentavalent vaccine (Penta3) and OPD attendance of female 15 years & above were purposefully[6] selected for assessing data accuracy. Records for the months of March and July 2011 from registers for these data elements were recounted and cross-matched with the figures in the corresponding monthly reports of the health facilities.

In the course of the assessment, the data collectors missed 9% of the selected data and these missing data were dropped from the analysis.

Table 3 shows the level of data accuracy by data element and by health facility type. Overall, in about 41% cases the data items completely matched between the registers and the reports. Only at hospital level, the data accuracy for all the three data elements exceeded the minimum level of 60% data accuracy.

**Table 3: Data Accuracy at Health Facility Level**

| Date elements | Facility type | Data items checked (Sample size) | Data Items matched | Percent data accuracy |
|---|---|---|---|---|
| Repeat Contraceptive Acceptors | HP | 59 | 22 | 37.29% |
| | HC | 62 | 26 | 41.94% |
| | Hospitals | 6 | 4 | 66.67% |
| | All HFs | 127 | 52 | 40.94% |

[6] In the reformed HMIS the definition of Repeat Contraceptive Acceptors was modified to those clients who are ever users of any contraception and in a given year are coming for the first time for contraception (either for re-supply, or restarting or starting a different method of contraception). Thus, ever-user clients who come for second and subsequent visits are not counted. Previously, however, all the repeat visits were counted as continuous users. Thus, there were chances that the health staff might confuse the definition of Repeat Contraceptive Acceptors. On the other hand, in case of OPD attendance, the patients' data is recorded in the OPD Abstract Register and also in OPD Tally sheet. In the register, one row is used for one visit and the main diagnosis is recorded even if the patient comes for more than one illness. On the other hand, in the Tally sheet, every diagnosis is tallied; moreover, the tally sheet allows tallying by age and sex groups. This arrangement encourages the health staff to rely on the tally sheet for reporting and there are chances that the records in the register and tally sheet might not match. The most straight forward record is for pentavalent vaccination. However, in this case chances of over-reporting are there to show higher performance. Thus, these three data elements were selected to examine the level of data accuracy.

| Date elements | Facility type | Data items checked (Sample size) | Data Items matched | Percent data accuracy |
|---|---|---|---|---|
| Penta3 | HP | 62 | 20 | 32.26% |
| | HC | 61 | 31 | 50.82% |
| | Hospitals | 6 | 4 | 66.67% |
| | All HFs | 129 | 55 | 42.64% |
| OPD Attendance | HP | 61 | 37 | 60.66% |
| | HC | 62 | 10 | 16.13% |
| | Hospitals | 6 | 4 | 66.67% |
| | All HFs | 129 | 51 | 39.53% |
| All 3 data elements | HP | 182 | 79 | 43.41% |
| | HC | 185 | 67 | 36.22% |
| | Hospitals | 18 | 12 | 66.67% |
| | All HFs | 385 | 158 | 41.04% |

### 7.1.2 Data Completeness

#### 7.1.2.1 Monthly Report Completeness

The completeness of the monthly report is measured by number of HF reports with over 90% of the data elements filled against the total number of data elements that the facility was supposed to fill. The result showed less than 7% of the facilities did not complete the monthly form before reporting. It was found that all the three zones/special woreda met the 90% acceptable completeness standard (Table 4).

**Table 4: Monthly report data completeness**

| Facility Type | Sample size | # of HF reports meeting 90% completeness criteria | % of HF reports meeting 90% completeness criteria |
|---|---|---|---|
| HP | 36 | 32 | 88.9% |
| HC | 31 | 30 | 96.8% |
| Hospitals | 3 | 3 | 100% |
| Total | 70 | 65 | 92.9% |

#### 7.1.2.2 Monthly Health Facility Reporting Completeness

In addition, the completeness of the report at woreda level is assessed by how many facilities in the whole woreda were supposed to report are actually reporting to the respective WorHO. In the nineteen woredas, over 99% of the facilities were observed to be reporting (Table 5).

**Table 5: Monthly HF Reporting Completeness**

| Zone | Month/2011 | # of expected monthly reports | # of monthly reports available at WorHO | % of HF reports available at WorHO |
|---|---|---|---|---|
| Hadiya | March | 350 | 348 | 99.43% |
| | July | 350 | 349 | 99.71% |
| | Total | 700 | 697 | 99.57% |
| Kembata Tembaro | March | 155 | 151 | 97.42% |
| | July | 155 | 152 | 98.06% |
| | Total | 310 | 303 | 97.74% |
| Halaba | March | 86 | 86 | 100% |
| | July | 86 | 86 | 100% |
| | Total | 172 | 172 | 100% |
| Total | March | 591 | 585 | 98.98% |
| | July | 591 | 587 | 99.32% |
| | Total | 1182 | 1172 | 99.15% |

### 7.1.3 Timeliness

Another dimension of data quality is timeliness. Timeliness is measured by the WoHOs and ZHDs receiving facilities' reports by the predetermined deadlines. Five out of eight WoHOs in Kembata Tembaro zone did not have records to measure timeliness. The 14 WoHOs had records of report receipt and showed 77% of the health facilities met the reporting deadline.

### 7.1.4 Data quality check

Table 6 shows that in over 60% of the Health Posts and Health Centers, the supervisors visited the health facility for supervision and 75% of the supervised HFs received feedback on the supervisory visits. However, no hospital was visited by the supervisors in the last 3 months.

In 64% of the supervised Health Facilities (primarily HCs and HPs) i.e. 49% of all the HCs and HPs, the supervisors had carried out data quality check.

**Table 6: Data Quality Assurance at Health Facilities**

| Facility Type | HFs receiving 1 or more supervisory visits in last 3 months | Supervised HFs reporting data quality check during supervision | Supervised HFs reporting receiving feedback after supervisory visits |
|---|---|---|---|
| Health Posts (n = 36) | 25 (69%) | 16 (64%) | 16 (64%) |
| Health centers (n = 31) | 19 (61%) | 12 (63%) | 17 (89%) |
| Hospitals (n = 3) | 0 | 0 | 0 |
| Total (n = 70) | 44 (63%) | 28 (64%) | 33 (75%) |

### 7.1.5 Use of HMIS Information

The use of information was assessed by observing feedback provided on facility performance and through records of performance review meetings to collect documentary evidences of whether or not HMIS findings were discussed and decisions were eventually made based on those discussions.

#### 7.1.5.1 Data Display

Availability of tables, charts and/or maps on (1) maternal health indicators, (2) child health indicators, (3) facility utilization, and /or disease surveillance indicators were assessed for understanding the level of data display in the health facilities, zonal health departments and woreda health offices. Table 7 shows that 62 (89%) health facilities were displaying data; of them 35 (56%) HFs had all the indicators updated over the last 3 months period.

**Table 7: Display of Data at Health Facilities**

| Data Display (n=70) | No. of HFs displaying data | | Displaying HFs with all displayed data updated | | Displaying HFs with at least 1 displayed data item updated | |
|---|---|---|---|---|---|---|
| All 4 indicators | 42 | (60%) | 22 | (52%) | 30 | (71%) |
| 3 indicators | 15 | (21%) | 11 | (73%) | 15 | (100%) |
| 2 indicators | 5 | (7%) | 2 | (40%) | 5 | (100%) |
| Total (1-4 indicators) | 62 | (89%) | 35 | (56%) | 50 | (81%) |

Among those HFs displaying data (n=62), the most common indicators displayed were maternal health indicators (100% HFs) and child health indicators (100% HFs); disease data were displayed in 85% and facility utilization data were displayed in 74% HFs.

Fifty two (74%) HFs displayed the map of their catchment area and 55 (79%) HFs displayed a summary of the demographic information.

At zonal/woreda level 100% of the ZHDs and 86% of the WorHOs displayed map of the catchment area, service delivery data and demographic data.

#### 7.1.5.2 Data Analysis

**Figure 2: Data Analysis at HF level**

Fig. 2 shows that most HFs (73%) calculated indicators for their catchment area, but fewer HFs were carrying out comparisons with woreda/zonal targets (13%) or comparisons among types of service coverage (31%) or comparison over time (40%). In terms of maintaining records of "lost to follow-up" for immunization, only 23% HF were maintaining such records.

**Table 8: Data Analysis at WorHOs**

| Types of Data Analysis | No. of WorHOs performing the analysis | % |
|---|---|---|
| Calculate indicators for each facility catchment area | 16 | 84% |
| Summary report for woreda | 19 | 100% |
| Comparisons among HFs | 11 | 58% |
| Comparison with woreda/zone target | 14 | 74% |
| Comparison among types service coverage | 9 | 47% |
| Comparison of data over time | 16 | 84% |

At woreda level, the health offices were carrying out various data analysis as depicted in Table 8.

#### 7.1.5.3 Use of Information at HF level

The use of information was assessed by observing evidences of feedback provided to the facility on their performance and the records of Performance Review Meetings (PRM) for examining the evidences of use of HMIS information for performance monitoring and decision making.

Only about 33% of the HFs (mostly health centers and health posts) reported receiving any feedback on their performances from their higher level. None of the hospitals reported receiving any feedback (Table 6).

In terms of establishing Performance Review Teams at HFs, 70% of the health facilities have PRTs and of them 73% were maintaining the meeting records. In fact all the Health Centers had established PRT and almost all (over 93%) of them were maintaining meeting records (Table 6). At HP[7] level, only 44% had Performance Review Teams and only 31% among them had records.

**Table 9: Performance Review Teams at Health Facilities**

| Facility Type | Sample size | # & % HFs receiving feedback | # & % of HFs with Performance Review Teams (PRT) | # & % of HFs with PRT maintaining meeting records |
|---|---|---|---|---|
| HP | 36 | 12 (33.3%) | 16 (44.4%) | 5 (31.3%) |
| HC | 31 | 10 (32.3%) | 31 (100.0%) | 29 (93.5%) |
| Hospitals | 3 | 0 | 2 (66.7%) | 2 (100.0%) |
| Total | 70 | 22 (31.4%) | 49 (70.0%) | 36 (73.5%) |

[7] It may be noted that there are on an average only 2 (1-3) staff at HP level. Usually, the performance review of HPs takes place at health center level during a monthly meeting of the HEWs with their supervisor. Thus, for HPs, performance review meetings at HC level with their supervisors are more relevant.

Since most HCs and Hospitals had well established PRTs, Table 7 below shows the level of HMIS information use for performance review and decision making at these health facilities. In 44.8% of the HCs who were maintaining PRM records, HMIS was discussed in the last 3 months and among these over 69% had evidence of making decisions using HMIS data.

**Table 10: HMIS Information Use at HF**

| HF type | # of HFs maintaining PRM records | # & % of HFs with HMIS data discussed during PRM in the last 3 months | | # & % of HFs with decisions made based on HMIS data at PRM in the last 3 months | |
|---|---|---|---|---|---|
| HC | 29 | 13 | (44.8%) | 9 | (69.23%) |
| Hospitals | 2 | 1 | (50.0%) | 0 | (0.0%) |
| Total | 31 | 14 | (45.2%) | 9 | (64.29%) |

In terms of zonal distribution, only the HCs and Hospitals in Hadiya and Kambata Temaro had records that showed HMIS data use for performance monitoring and decision making.

#### 7.1.5.4 Use of HMIS at ZHDs/WorHOs

Table 8 below shows the performance of administrative health institutions, i.e. Zonal Health Departments and Woreda Health Offices in the cluster in terms of information use.

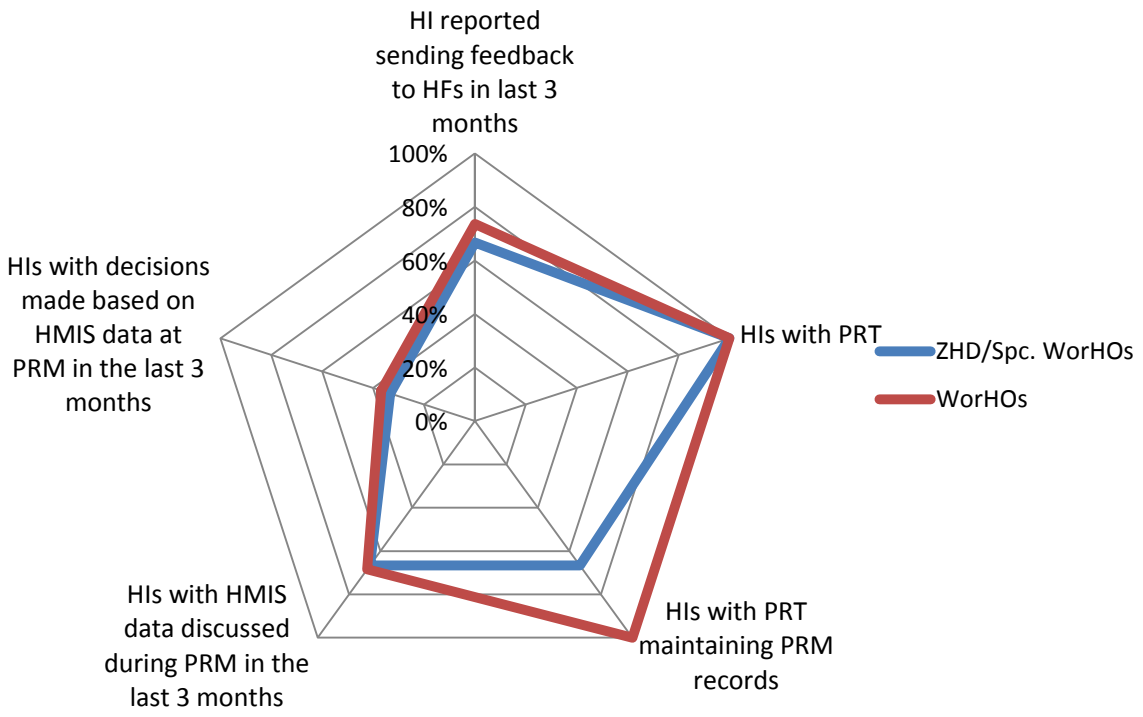
**Table 11: Performance Review Teams and HMIS Information Use in Administrative Health Institutions (HI)**

| HI Type | Total in the cluster | # & % HI sending feedback to HFs in last 3 months | # & % of HIs with Performance Review Teams (PRT) | # & % of HIs with PRTs maintaining PRM records | # & % of HIs with HMIS data discussed during PRM in the last 3 months | # & % of HIs with decisions made based on HMIS data at PRM in the last 3 months |
|---|---|---|---|---|---|---|
| ZHD/Spc. WorHOs | 3 | 2 (67%) | 3 (100%) | 2 (67%) | 2 (67%) | 1 (33%) |
| WorHOs | 19 | 14 (74%) | 19 (100%) | 19 (100%) | 13 (68%) | 7 (37%) |
| **Total** | 22 | 16 (73%) | 22 (100%) | 21 (95%) | 15 (68%) | 8 (36%) |

Overall, all the administrative health institutions in the cluster have established Performance Review Teams. Almost all (95%) of them were maintaining the meeting records. Review of the

meeting records indicate about 68% of these institutions used HMIS for their performance review in the last 3 months and in 36% of the institutions decisions were made base on HMIS data in the last 3 months. (Fig 1)

**Figure 3: HMIS Information Use at Administrative Health Institutions**




## *7.2 Determinants of HMIS Performance*

The PRISM framework looks beyond the relationship between HMIS processes and performance, and incorporates behavioral and organizational factors that determine HMIS performance. The new HMIS is geared towards supporting and strengthening local action-oriented performance monitoring. In accomplishing this objective, a paradigm shift is required from simple reporting data and responding to the situation as instructed by higher authorities, to actually analyzing and interpreting the information on hand, and providing self-assessment and problem-solving. This requires reorienting and redirecting health workers at all levels of the system to change attitudes towards their own capacities, their jobs, and their roles in the organization; and requires organizational interventions to change the organizational values and practices to actually value and practice evidence-based decision making.

### 7.2.1 Behavioral Determinants

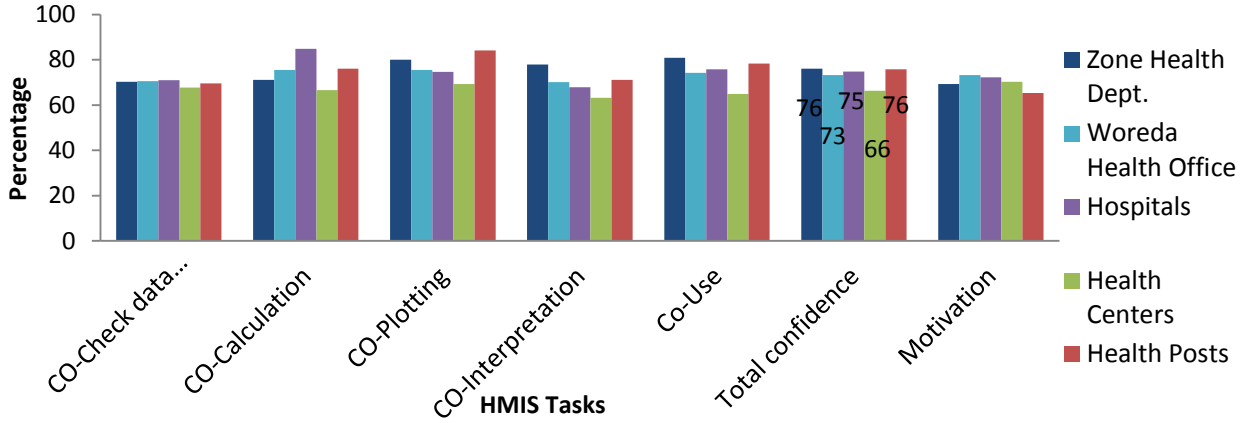
The PRISM framework postulates if people understand the usefulness of HMIS tasks, have high self-efficacy or confidence and competency in preforming given task, and then they will complete the task diligently. The level and role of behavioral factors such as motivation, confidence, demand for data, task competency and problem solving skills were assessed in the Hadiya and Kembata

Tembaro zones and Halaba special woreda using self-administered questionnaires. The health staffs understanding of the rationale for including certain types of information on data collection were also measured to illustrate the level of demand for HMIS information. Problem solving is another skill that is necessary to using data for identifying and solving the problems.

#### 7.2.1.1 Self-efficacy or Confidence Level for HMIS Tasks

Health workers confidence levels were assessed on scale of 0 to 100 from no confidence to full confidence in performing a particular HMIS task. The results showed that on average confidence levels of respondents for calculation, plotting, and use of data were above 75%, but confidence levels were around 70% for checking data quality and interpretation of data. This indicates that respondents felt more confident in collecting data than interpreting data. A similar pattern of confidence levels for various tasks observed between health extension workers, ZHD, WoHOs and hospital staff. The lowest average confidence level (66%) was observed among health workers in the health centers. Overall, respondents in all levels (mean score of 70%) believed that performing HMIS tasks bring about positive outcomes.

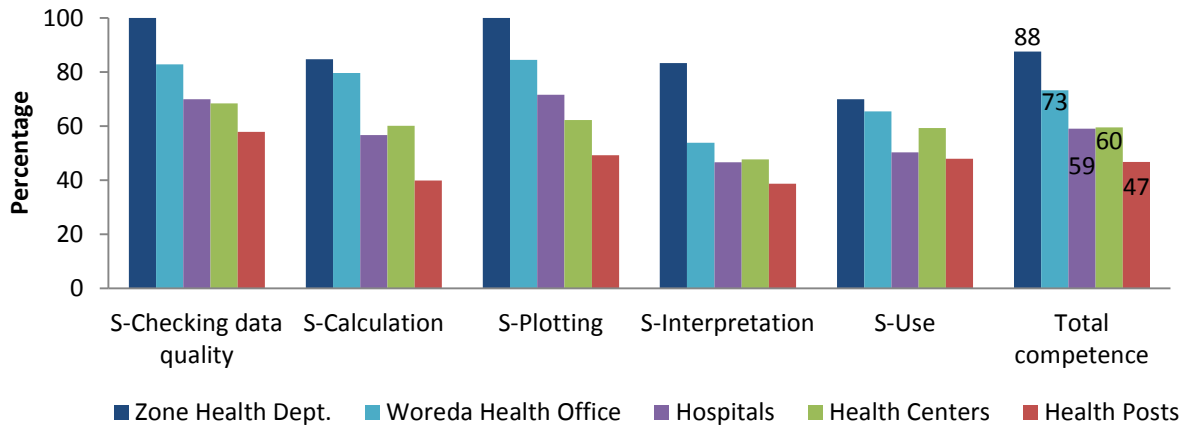
**Figure 4: Comparison among Perceived Confidence Level for HMIS (N=10, N=57, N=14, N=110, N=38)**




#### *7.2.1.2* HMIS Task Competence

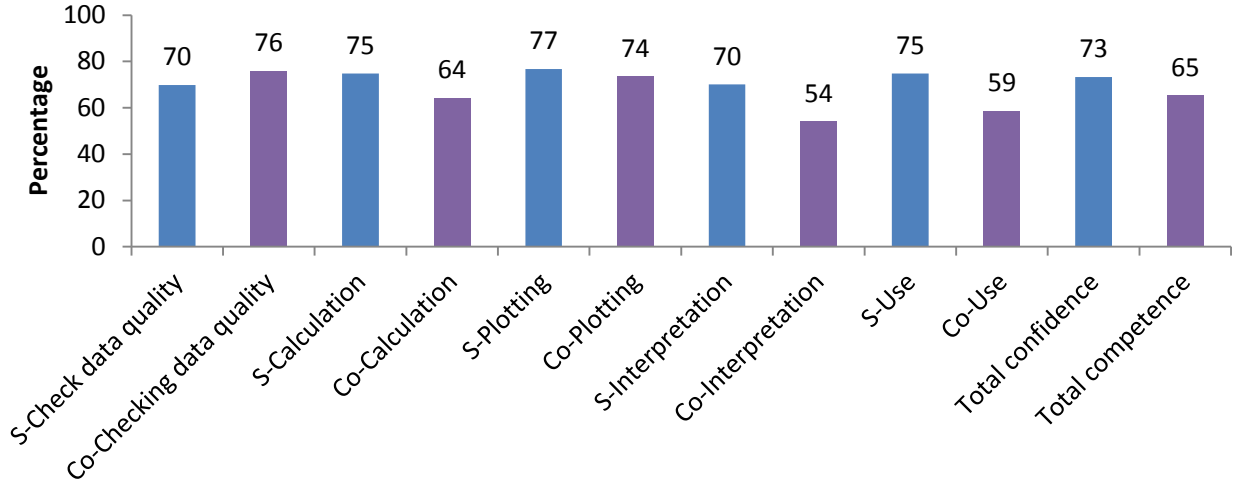
HMIS task competency was measured by asking respondents to solve problems with a pencil and paper test. On average, 65% of the respondents demonstrated the ability to check data quality, do basic calculations, do basic plotting, complete data interpretation, and use of information skills. Sixty four percent of respondents were able to calculate percentage rates of indicators and seventy four were able to plot the given data. The respondents scored lower in interpreting (54%) and using information (59%) for decision making. These findings indicate that data are mostly collected for reporting purposes rather than for local use of information to decide actions to be taken to improve performance. As expected, the HMIS task competency level decreases as one goes down to the lower level of the health system- from zone (88%) to health posts (43%). However, in all levels except ZHDs respondents scored slightly higher in use of information compared to interpretation skills. They were not able to properly interpret/analyze the data but had relatively better knowledge of how to use the data.

**Figure 5: Comparisons among Observed HMIS Task Competence (N=10, N=57, N=14, N=110, N=38)**




A high confidence level for performing HMIS tasks is theoretically associated with high levels of competency in HMIS tasks. When the average confidence levels for performing HMIS tasks are compared with the average competency levels for performing HMIS tasks the results demonstrated consistency between confidence and competency for checking data quality and data plotting tasks (Figure 6). However, there were gaps between perceived confidence and observed competency levels for calculation, interpretation, and use of information. These discrepancies indicate overestimation in confidence levels for certain HMIS tasks when actual competencies for those tasks were low.

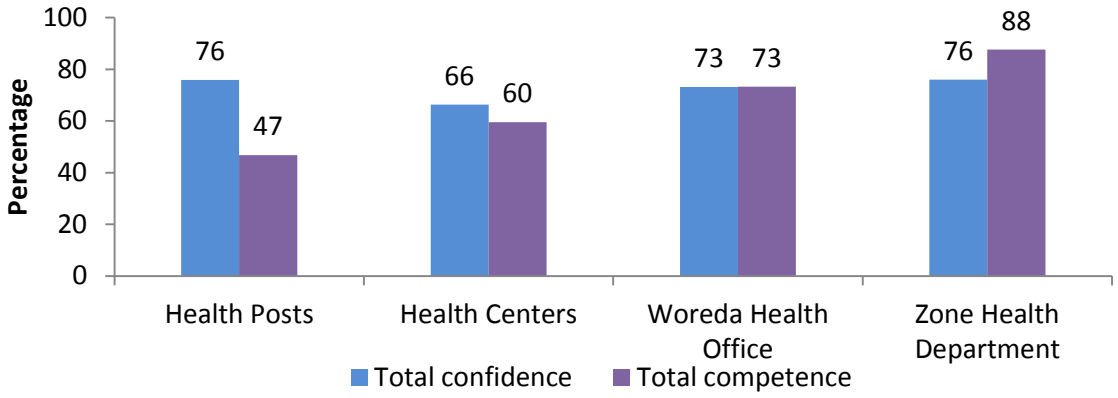
**Figure 6: Comparison among Perceived Confidence and Observed HMIS Task Competence (N=229)**




The gap for confidence and competency was found to be wider at health post level where most of the health extension workers involved in the assessment perceived a high confidence level in most of the HMIS tasks but were not able to demonstrate the same skill level. Low capacity was mainly observed in calculating, plotting, interpreting and using data at health postt level. This indicates that HEWs are mainly collecting data to report to higher levels and do not have the capacity to analyze the data and to take action or make decisions in the health posts.

The findings between perceived confidence and observed competence levels for HMIS tasks at the WoHO and ZHD level shows a different picture. The results from the WoHO and ZHD levels show a slightly higher level of competency compared to perceived confidence that observed in checking data quality, calculations and data plotting among respondents from WoHOs and ZHDs.

**Figure 7: Perceived Confidence and Observed HMIS Task Competence by Levels (N=10, N=57, N=38)**




### 7.2.2 Organizational Determinants

#### 7.2.2.1 HMIS Management

Managing a health information system is about managing resources and functions to produce better outcomes. This assessment looked at the presence of mechanisms for managing HIS functions and resources for overall better HMIS performance in the woreda health offices and zonal health departments. HMIS management functions are comprised of HMIS governance, planning, training, supervision, finances, and use of quality/performance improvement tools. The management scores of different aspects are dependent on availability of records at WoHOs and ZHDs.

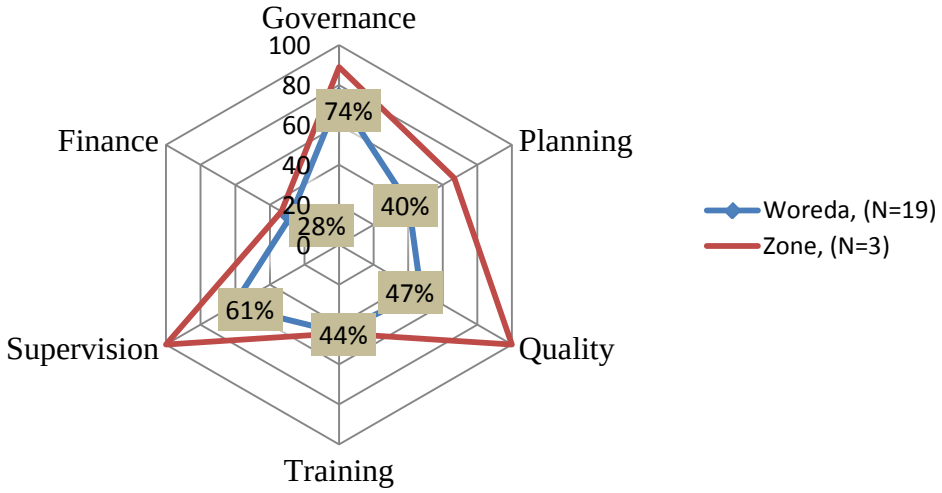
The governance dimension of HMIS management is measured by the presence of management structure, updated organizational chart and distribution list of information reports. The planning dimension is measured by availability of a recent HMIS situational analysis report, and HMIS annual plan and targets. The management of quality is assessed by availability of HMIS procedural guidelines/standards at WoHOs and ZHDs levels. The training component is assessed by the presence of training manuals, on-the-job training and schedule of planned trainings. The supervision management level was measured by the presence of supervisory checklist, schedule and supervisory reports. While the financial mechanisms were measured by the presence of general HMIS related budget, budget line for HMIS supplies and long term financial plans for supporting HMIS activities.

At the WoHOs level, the percentile score for HMIS management showed that on average, close to two-thirds of the criteria for HMIS governance and supervision were met. While those criteria were well managed, HMIS procedural guidelines for quality standards were not available in 53% of the WoHOs, indicating inadequate directives to improving quality and performance. On average, close to 45% of the planning and training criteria were met. This low score indicates that respondents feel that planning and training needs improvements, particularly in the areas of developing the HMIS plan and on-the-job training aids. Though HMIS training manuals are available in all the WoHOs there are no training schedules and on-the-job trainings are not being provided. Sixty

percent of HMIS focal persons in the WoHOs reported receiving an HMIS training (46% in Kembata Tembaro and 70% in Hadiya Zones). The staffs trained from WoHOs are supposed to cascade down the training within the WoHOs as well as to the health facilities. However, only 10% reported presence of on-the-job trainings at WoHOs. In a public health sector where there is frequent staff turnover establishing and solidifying job orientation and continuous on-the-job training and coaching mechanisms is very essential to improving HMIS task competencies.

The average HMIS management scores in different dimensions were higher in the two ZHDs and Halaba special woreda health office than scores were at the woreda level. At the ZHDs/Special woreda health office, HMIS management scores for governance, quality and supervision were on average in the 90% and above category indicating that the HMIS management is good. While HMIS planning scores were met by only two-thirds of WoHOs (Figure 8). Similar to WoHOs, the training score at ZHD/special woreda office was low, showing weakness in the ability to organize trainings, particularly in areas of on-the-job training and schedule for planned trainings. The financial management score was found to be low at both ZHDs and WoHOs. There are no budget line items for HMIS supplies or long term financial plans supporting HMIS. Respondents reported HMIS related budgets are found in the zone and woreda health offices only for personnel. Thus both WoHOs and ZHDs have a limited role in HMIS financial management as supplies are fully provided from regional or federal levels.

**Figure 8: Mean Level of HMIS Management Functions**




### 7.2.2.2 Promotion of a Culture of Information

Organizations create a culture for promoting and sustaining certain values around organizational functions to be performed at optimal levels. Operationally, the culture of information is defined as, "the capacity and control to promote values and beliefs among members of an organization for collection, analysis and use of information to accomplish its goals and mission."[8] Evidence-based decision making needs to become a practice throughout the organization, with senior officials becoming role models for others in how they use information. Sometimes this process is called building a culture of information use. It is neither an easy nor an overnight change, but once accomplished, can make an enormous change in the organization's performance.

[8] Aqil A, Lippeveld T, et.al. PRISM Tools Users Guide. MEASURE Evaluation, June 2009

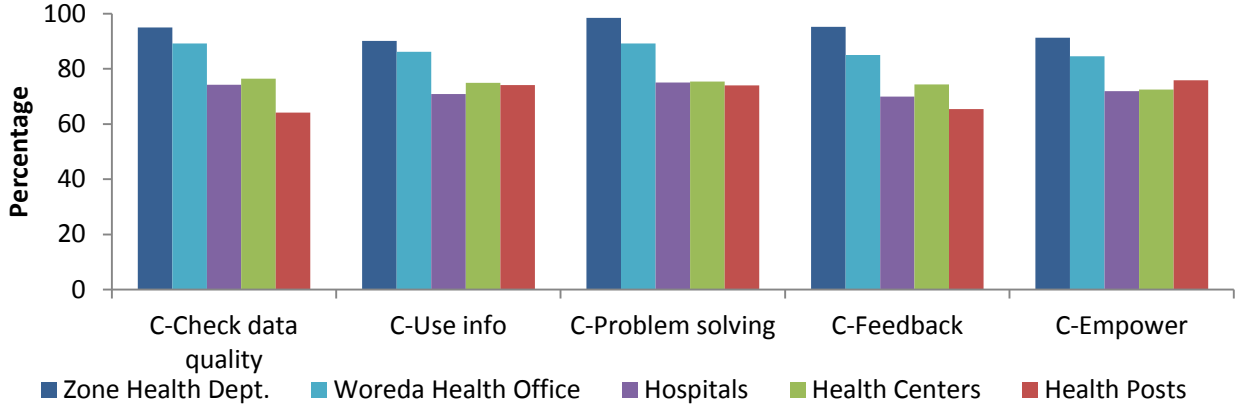
The zonal HMIS performance assessment reviewed the culture of information by determining how strongly people believe that the health department promotes values like:

- Emphasis on data quality
- Use of information
- Problem solving
- Feedback from staff and the community
- Empowerment and accountability

The results showed that overall the respondents at facility level strongly believe that the health department emphasizes data quality, use of information, problem solving, empowerment and sense of responsibility (scores of 70% or above). The only exception was the health extension workers. The HEWs (score 65%) were much more skeptical of the existence of the promotion of checking data quality and feedback by higher management levels (Figure8). This perception from the respondents (HEWs) corresponds with the unacceptably low level of data accuracy checks and feedback processes found at health facilities level.

The findings of promoting culture of information at WoHOs and ZHDs levels are higher (scores of 85% or above) than at the facility levels. It indicates that the respondents at this level feel strongly that the management gives due emphasis to data quality, use of information, problem solving, feedback and empowerment. However, a wide gap is observed between respondents' perception of organization's ability to emphasize problem solving and actual problem solving skills, particularly at all types of health facilities (52%) and WoHOs (67%). This is in part confirmed because most of the HMIS related decisions in the performance review meetings at health facilities are referred to higher levels, thus indicating the low level of problem solving capabilities in the facility level. Thus, having better problem-solving skills is essential for using information and for better decision making and needs to be addressed under HMIS strengthening plans.

**Figure 9: Comparison among Different Dimensions of Culture of Information**




The promotion of a culture of information, was also assessed by observing the different activities such as the use of HMIS in action plans, the use of directives on how to use information and how to share success stories showing representation of facilities in woreda performance review meetings. Despite the high perception of management emphasizing the culture of information, such activities are less observed at facility level than perceived. In regards to the HMIS information use manual none of the assessed zones/special woredas met the seventy percent evaluation standard at the facility level. Weaknesses related to use of information can be traced to a lack of guidelines or standards. This lack of guidelines or standards corresponds with the observed limited annual plans which show decisions based on HMIS information in the health facilities.

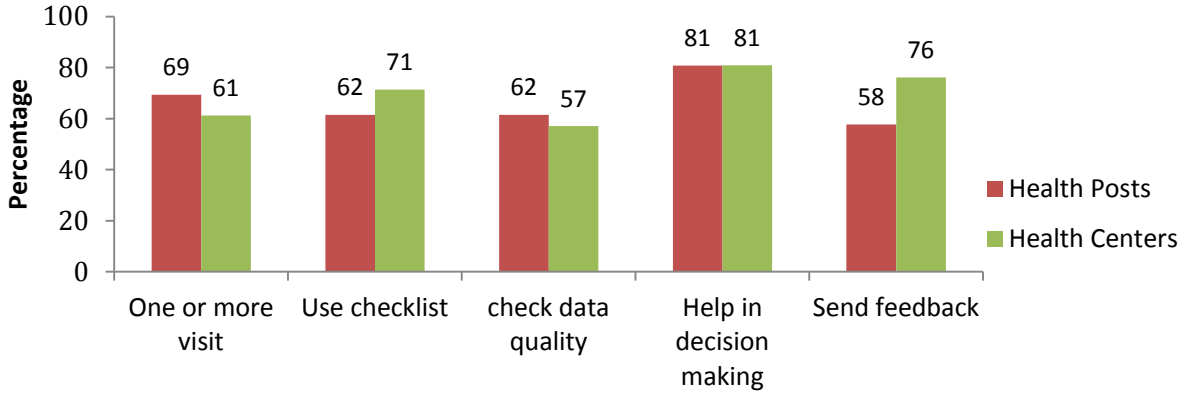
Although it is low, records showed that 65% of persons in charge of HCs and the two hospitals attend meetings at the woreda level for discussing performance. Such performance review meetings provide a forum for peer review which could stimulate interest in use of HMIS information and strengthening HMIS. Those officers can then replicate these messages at their facility level—fostering the promotion of a culture of information.

On the other hand, sharing of success stories was not a common practice at all levels of the health system in the three zones/special woreda. Only Kembata Tembaro zonal health department produces advocacy/promotional brochures on progress of health and health related indicators based on HMIS information.

#### 7.2.2.3 Supervision Quality

Close follow up with feedback could contribute to improving overall performance, particularly to better data quality. Supportive supervision provides opportunities that could be used to improve the understanding of data and skill level in interpreting results. Inadequate and irregular supervisions were reported by the health facilities. Around 65% of the health facilities (69% health posts and 61% health centers) had received supervisory visits during the last three months. While sixty percent of those health posts and 15% of health centers who received supervisory visits reported a median of two visits in the three months. Sometimes data quality is investigated during supervisory visits, but in most cases no systemic checklist was used to guide this supervision. Thus, in few cases (59%) proper attention was given to checking data quality during supervisory visits. An important aspect of supportive supervision is also providing feedback. In order to motivate personnel to improve or maintain their engagement feedback is necessary. Figure 12 shows that of the supervised facilities 76% of the health centers and 58% health posts received feedback from supervisors in the last quarter.

**Figure 10: Perception of Different Aspects of Supervision Quality (N=36, N=31)**




#### 7.2.2.4 Availability of Resources

The availability of resources to perform HMIS tasks is crucial to the success of an HMIS. Twenty five percent of the HCs and two of the hospitals surveyed have at least one computer and printer while 42% of the HPs do not even have calculators (Table 12). A regular telephone line is not widely available at the facility level, with less than 40% of HCs having regular telephone lines and only

33% having internet connection. These resources are contributing factors for having and maintaining better HMIS performance. For instance, the effect of a shortage of calculators at the health posts was reflected in the competency test by the low score of respondents' ability to calculate data. This could also be one of the contributing factors for the high level of inaccuracy of data between the tally sheet/register and monthly reports for the selected indicators.

At woreda level all WoHOs except one (in Kembata Tembaro zone) have at least one computer and 66% have two or more computers. Similar to the health centers, internet connection is not available in most of the WoHOs. Only 32% of WoHOs (five in Hadiya and two in KembataTembaro zone) have access to the network and internet.

It is also important to note that electric power outages are also common in the facilities; only 3% of HPs, 56% of HCs and two hospitals reported to have access to electricity via the regular supply or through a generator. Health centers in Kembata Tembaro zone and Halaba special woreda did not meet the 80% electric power coverage standard, only seven HCs in Kembata and four HCs in Halaba have electricity. The situation is much better at the woreda level where 86% of the WoHOs surveyed have access to electric power.

**Table 12: Availability of Resources at Health Facilities and WoHOs**

| Resources | Category | Percentage Distribution for the Cluster | | | |
|---|---|---|---|---|---|
| | | Health Posts | Health Centers | Hospitals | Woreda Health Office |
| a. Computer | 0 | 83 | 56 | 0 | 6 |
| | 1 | 0 | 17 | 0 | 28 |
| | ≥2 | 0 | 11 | 100 | 66 |
| b. Data backup | Yes | 0 | 10 | 2 | 36 |
| c. Printer | 0 | 86 | 58 | 0 | 11 |
| | 1 | 0 | 17 | 0 | 32 |
| | ≥2 | 0 | 11 | 67 | 52 |
| d. UPS | 0 | 67 | 78 | 33 | 95 |
| | 1 | 0 | 0 | 0 | 5 |
| | ≥2 | 0 | 0 | 0 | 0 |
| e. Generators | 0 | 86 | 50 | 0 | 61 |
| | 1 | 0 | 36 | 67 | 30 |
| | ≥2 | 0 | 0 | 33 | 5 |
| f. Regular Telephone | 0 | 83 | 47 | 33 | 100 |
| | 1 | 3 | 33 | 0 | 0 |
| | ≥2 | 0 | 6 | 67 | 0 |
| g. Radio Phone | 0 | 86 | 78 | 33 | 9 |
| | 1 | 0 | 3 | 0 | 38 |
| | ≥2 | 0 | 0 | 0 | 53 |
| h. Internet | Yes | 20 | 33 | 2 | 32 |
| i. Calculator | 0 | 58 | 3 | 0 | 0 |
| | 1 | 36 | 22 | 0 | 5 |
| | ≥2 | 3 | 61 | 100 | 91 |
| j. Electricity | Yes | 3 | 56 | 67 | 86 |

*0=no equipment, 1= one, ≥2 = two or more equipment*

## *7.3 Focus Group Discussion Findings*

Subsequent, to the data collection survey to measure HMIS performance, a Focus Group Discussion (FGD) involving heads of policy and planning directorate and HMIS focal people from the RHB and ZHDs was carried out in Hawassa in order to strengthen the assessment with qualitative information. The following topics were covered in the FGD:

1. Strength and weaknesses of the new HMIS
2. The added value of the family folder for information use
3. Scopes for decision making using information at zone and woreda levels.
4. Identify factors that inhibit use of information for evidence based decision making
5. The reasons for the gap between staff confidence and HMIS task competencies

*The Reformed HMIS:*

- The FGD participants indicated that the new reformed HMIS provides standardized, integrated and simplified HMIS tools to produce quality data. Country-wide standard instruments for data collection and guidelines for use of information were introduced as part of the reform. This allowed conducting health service performance reviews i.e. comparisons of performance across locations. Introduction of electronic HMIS application was also noted as one of the strengths of the new HMIS. The eHMIS facilitated data recording and communication of progress between RHB and ZHDs; however, data communication with lower levels was not available at the time of the assessment.

- The FGD also highlighted areas that might need further improvement in the scaling-up of the reformed HMIS. Currently, printing and distribution of HMIS instruments are centralized at FMoH level to gain economy of scale. This makes it challenging for the zones to quickly respond whenever shortage of HMIS data collection and reporting forms occurs at lower level. Availing soft copies of reporting formats in the ZHDs for reprinting to fill gaps was suggested as a possible solution. Language barriers at health post level were also mentioned as contributing factor for low data quality. Most of the data collection and reporting forms are in English which makes the understanding and proper recording of health service information by HEWs difficult.

- ZHD were not fully using the eHMIS - they were manually aggregating information from lower level for monitoring progress, feedback, reporting to their zonal council and even for presenting progress at the annual review meeting. The problem was up to six weeks delay at regional health bureau before they could update the eHMIS database. This affected use of the data generated through eHMIS and the provision of timely feedback to lower levels.

- Problem with eHMIS, data entry at regional level was one of the concerns highlighted by the ZHDs. At times they have found discrepancies between the reported data and values entered in the computer database. Participants indicated that there were missing data, even when complete reports were sent from zones. This could be due to ineligible writing when filling the reporting forms and the scanner failed to read correctly.

- The FGD participants appreciated the ongoing capacity building (training, fostering mentoring and supportive supervision) efforts in the zones. However, they pointed out that the trainings are not being cascaded to the facility levels as expected. In WoHOs HMIS responsibilities and coordination tasks are mainly carried out by the planning team, but in most cases disease prevention and health promotion (DPHP) team leaders participated in the training of trainers (ToT). The respondents felt there were insufficient HMIS skills among people who were trained and who are performing HMIS tasks. Likewise, the

supportive supervision to the facilities was reported to be weak: absence of supervision schedule, lack of HMIS specific checklist or HMIS was not adequately addressed in the integrated supervision checklist and limited feedbacks were pointed out as areas that need further improvement.

- Lack of integration of HMIS reports was also mentioned as weaknesses of the current HMIS. Program specific parallel reports were being demanded from the health facilities. The participants saw this as problem of ownership in implementing the principles set for HMIS at all levels.

- Lack of storage/shelves in some health centers and shortage of human resources particularly in card rooms were also mentioned as gaps in the HMIS.

*Data Quality*: The FGD participants brainstormed on the possible causes for the observed discrepancies of data between registers and monthly reports. Unavailability of registers, low understanding of indicators (particularly repeat contraceptive acceptors and OPD visits), arithmetic errors and lack of data quality check during supervision were mentioned as possible factors contributing for the low data accuracy level. During the field assessment, data collectors observed that some facilities were using old register forms which made comparing data accuracy for selected indicators difficult. Moreover, behavioral factors such as workload, low awareness of importance of data, low motivation of HMIS focal persons were highlighted. In most of the health facilities HMIS focal persons are delegated to undertake HMIS tasks on top of their regular duties and responsibilities. Hence, because of workload, data recording may not be done with necessary care.

*Use of Information*: The new HMIS requires self –assessment and performance review mechanisms to be established at all levels of the health system to monitor progress in service delivery, identify problems, and make a timely intervention. The FGD highlighted that the presence of performance review meetings provided a forum for health managers to regularly use information to monitor performances and make evidence based decision. Although an encouraging trend existed, absence of performance review teams, irregularity of meetings, and lack of follow up of identified issues were some of the shortfalls the group mentioned. In addition, there was no standard agenda for the review meetings. Therefore, some review teams cover data quality, timeliness and completeness of reports while others look into broader service utilization and performances.

Information use guidelines were identified as another instrument to promote culture of information use in the zones. Anecdotal best practices of information use in facilities and woredas were also mentioned by FGD participants. However, such guidelines are not in place and trainings on use of information were not widely provided at facilities, indicating that data are collected mainly for reporting purposes.

*Family Folder*: Family Folders (FF) are innovative community based data collection instruments that provides comprehensive family centered health services information. The FGD highlighted that the Family Folders were very useful in terms of documenting demographic information and health profile of the community within health post catchment areas. Identification and registration of all households in each catchment area was made possible with the help of Family Folders. Some HEWs were using the FF for targeting households with specific needs. To date, information generated through the FF was used at woreda and zone levels to monitor progress in service delivery particularly for environment and sanitation programs. For instance, the FF provides percentage of households with latrine and those with hand washing facility.

However, information was not being used for woreda or zone planning purposes because the demographic data officially used (based on census) differs from those gathered by the HEWs. The zonal annual targets were extracted from HSDP-IV and regional targets which relies on population estimates derived from the 2010 census.

*Gaps between HMIS Task Confidence and Competencies:* Lack of understanding the organizational and behaviors assessment questions was indicated as one possible reason for the observed gap. Although, data collectors assisted in translating the questions to the HEWs in the course of field assessment, the fact that the self-administered tool prepared in English might have impacted the responses provided by lower level.

Participants also pointed out there are knowledge and experience gap among the health workers in terms of HMIS tasks. In most cases those in management might not be directly engaged in calculating indicators, data interpretation and analysis. Usually, data management and analysis were carried out by HMIS focal people.

# 8 Discussion and Recommendations

This baseline assessment highlighted very low level of data accuracy in health facilities with the exception of hospitals across all the three study areas. Data accuracy is affected by lack of data quality check process, absence of HMIS procedural manual and minimum use of data quality checklist during supervision. Knowledge of data quality check methods also found limited (ranges between 58%-68%) particularly among health post and health center staff. Poor understanding of definition of indicators such as OPD visits and low capacity to calculate data were also contributing to the low level of data accuracy. Despite the fact that reports are scanned and entered into the database automatically a similar low level of data accuracy was observed for health posts while comparing the paper report against the computer database. The focus group participants indicated that such things mostly happen due to illegible handwritings whereby the scanning machine fails to read and missing paper reports.

Unlike data accuracy, exceptionally high level of completeness of reports was observed at all levels of the health system. At facility level all the zones/special woreda met the acceptable completeness standard (90%) set in HSDP IV. Likewise on average 93% of the facilities are reporting to the WoHOs. However, the focus group discussion highlighted that facilities are required to fill all the data elements in the reporting form even if they do not provided some of services. The scanning system does not allow fields to be left blank which might require introducing a different code for services that are not provided.

Another encouraging pattern revealed was timeliness of reports. Although records of report receipt are not kept properly, from the available records more than 75% of the facilities were found to be reporting within the deadline. In Ethiopia context, this is high level of reporting even though the HSDP IV target for timeliness by facilities is 90%.

The use of information, another dimension of HMIS performance, was found limited in the assessed zones/special woreda. The new HMIS is geared towards supporting and strengthening local action-oriented performance monitoring. HMIS information use guideline helps identify gaps, to develop plans of action to address them, and review progress, thereby continually improving service coverage over time. In the assessed health facilities absence of such guideline was one of the contributing factors for the observed minimum use of HMIS information in the annual plans. This finding is consistent with the limited competence in data analysis, interpretation and problem solving at the health facilities. It shows data are being collected primarily for reporting, and use of data for evidence based decision making is low at peripheral level.

Nevertheless, although in a limited manner, performance reviews are being held regularly in the health facilities mainly in the health centers and hospitals. The use of HMIS information in the discussion and decisions taken are observed in few of the health facilities' performance review minutes. Lack of problem solving skills might account for most decisions being referred to higher authorities by the health facilities. On the other hand the use of information at woreda level was found relatively better compared to that of health facilities and plans were developed on the basis of HMIS data to improve service coverage. This is consistent with the relatively better (67%) competency observed in use of information and problem solving among the WoHO staff.

When comparing perceived confidence level with actual competency scores for HMIS tasks, little discord was observed between the subjective and objective assessments particularly in health centers, WoHOs and ZHDs. Rather, respondents from WoHOs and ZHDs scored slightly higher in checking data quality, calculation and plotting skills compared to their confidence levels. On the

other hand, gaps were found between perceived confidences and observed HMIS task competence among health extension workers. The low level of education among HEWs and how well the questions are understood by them might account for this gap. Also, there were gaps between perceived confidence and observed interpretation and use of information in all levels. Limited training on data interpretation and use of information, which does not allow respondents to self-assess their perceived confidence level and their actual skills, might have created the gap.

Despite the low skill level of data interpretation and use of information, respondents (more than 75%) could describe at least one reason for collecting data on diseases, immunization and target population. Further exploration should be done as to why such knowledge was not reflected on use of information. On the other hand, the knowledge of checking data quality methods ranges between 58%-70% at health facilities. The problem-solving skills were also low. This indicates that more importance is placed on how to collect data rather than analyze and use them for local decisions how to analyze and use them for local decisions. This approach is restrictive when data collectors are the facility managers, responsible for the health of the catchment area population, and information is needed and useful to fulfill that responsibility.

Use of information is affected by the limited information feedback to health facilities. Feedback does not occur on a routine basis. There is also limited feedback given to facilities about HMIS performance or comparing HMIS performance among the facilities within a woreda or comparing existing performance against targets. Displays of information serve different purposes ranging from creating a visual image of the work, demonstrating progress made to comparisons against targets, strengthening transparency, and others. Less than one third of the HPs and HCs and two third of the hospitals did not display information. However, of those who did, almost 71% also showed data updated from the last three months, indicating that they were using data to monitor their progress.

Training is not cascaded down to the peripheral health facilities as expected. There are no institutionalized mechanisms for planned training and training usually occurs on an ad hoc needs basis. There are no sufficient opportunities for continuous transfer of skills through on the job-training or orientation mechanisms. The FGD highlighted that though supervisions are taking place HEWs are not getting sufficient training or supportive guidance concerning use of HMIS instruments like family folders, recording and calculating indicators. There is also low understanding of the family folder among health workers at health center and woreda health office level who are supposed to provide supportive supervision to the HEWs. Similarly, the integrated supervision is not specifically geared towards HMIS tasks, but is part of the general supervision. There is no specific supervisory checklist for HMIS tasks, particularly for checking data quality and use of information.

Promotion of a culture of information is an important aspect of the information system because it strengthens sustainability, self-reliance and creates an enabling environment to make evidence-based decisions leading to better transparency and accountability. Although there is a strong emphasis on data quality, there is less attention paid to serving as a role model for use of information or sharing success stories regarding use of information through newsletter or other means of communication.

The technical aspects of HMIS such as integration of data collection tools, availability and accessibility of user friendly database and availability of data collection and definition procedure manual are not well-established in the three zones/special woreda. Health facilities are still submitting parallel reports due to demands from programs and donors. These parallel reporting create a huge work burden and compromises data quality and the motivation and commitment of the staff towards the new system. Moreover, though the new eHMIS intends to reduce data entry

and processing burden of WoHOs and ZHDs, the database is not accessible on timely basis to inform plan and decisions. As a result woredas and zones are still entering and aggregating data for local consumption and to report to their respective administrative council. Improving report timeliness, speeding the data entry and processing at regional level and expanding access to the database to woreda health office level are crucial to enhance data quality and use of information for evidence based decision at all levels.

## RECOMMENDATIONS

The findings of this PRISM assessment is expected to inform the SNNP regional health policy makers for taking necessary actions to improve HMIS data quality and information use. The assessment identified strengths and weaknesses of the HMIS performance in terms of data quality and information use in the zones. Based on the findings, the following general recommendations are provided based on the findings of the assessment for further discussion in the planned action planning workshop.

### *Short term*

- Standardize supervision practices – develop supervisory checklists. Supervision should be conducted on a regular schedule with feedback provided to the facilities. Performance data (data quality and use indicators) should be collected, monitored and reviewed regularly.
- Link HMIS data with program monitoring – integrate HMIS quality controls activities into integrated supervisory visits. That is, if an EPI supervisor visits a facility they should be able to conduct the supervision for HMIS at the same time.
- Expand remote access to the processed data set to woreda health offices to facilitate timely use of information for decision making at local level. Roll out the eHMIS to the woreda level.
- Establish a standardized feedback mechanism between levels. eHMIS provides an opportunity for generating automated report from the HMIS software that should be forwarded to reporting sites at regular intervals.
- Create linkages with service delivery managers – i.e. the facility in-charge should be integrated into the monitoring of HMIS performance.
- Review the existing training materials on use of information and revise accordingly. Conduct on the job training on data analysis, interpretation and continuous use of information at all levels.
- Conduct training/re-training for WoHOs and HCs on Family Folder procedures
- Develop mechanisms to integrate data need by different programs – ensure HMIS data are used to generate reports for the vertical programs (HIV/AIDS, TB, malaria, nutrition).

### *Long term*

- Establish systematic periodic assessments of HMIS performance in terms of data quality, data use and management functions on a periodic basis.
- Promote transparency and accountability of HMIS data. For example - institutionalize the use HMIS information to make everyone accountable for health system performance. Create procedures for dealing with non-compliance with performance targets.
- Identify local partners (NGOs within zones) to support HMIS – find a mechanism to generate budget for HMIS supplies locally to ensure sustainability of the system.