AN ASSESSMENT TO IDENTIFY FACILITATORS AND BARRIERS TO PMTCT DATA USE IN ZAMBIA:

Providing Recommendations and Strategies for Optimal Use of Data for Program Improvement

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Funding for this project is provided by:

unicef

Conducted by

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ACKNOWLEDGMENTS

This project was funded by the United Nations Children’s Fund. The authors would like to thank their partners and all staff who gave their time and energy to contribute to this project. Finally, they extend a special acknowledgment to all the Ministry of Health, provincial, district, and local health facility staff who welcomed them and helped immensely to conduct this study.
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ACRONYMS

DHO  District Health Office
EGPAF  Elizabeth Glaser Pediatric AIDS Foundation
EHR  Electronic health records
HIA1  Health Information Aggregation 1
HIA2  Health Information Aggregation 2
HMIS  Health Management Information System
M&E  Monitoring and evaluation
MOH  Ministry of Health
PHO  Provincial Health Office
PMTCT  Prevention of mother-to-child transmission
SI&E  Strategic information and evaluation
This report describes a qualitative assessment conducted by the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) of facilitators and barriers to prevention of mother-to-child transmission (PMTCT) data use in Zambia. The study consisted of 41 key informant interviews including interviews with Ministry of Health (MOH), provincial/district, and local health facility officials as well as with MOH partners throughout Zambia. Data from the semi-structured interviews were analyzed utilizing thematic analysis. Recommendations and strategic plans for optimal data use for program improvement were developed based on information obtained from these interviews.

The objectives of the work described here are the following:

1. Document the level of existing data use and feedback mechanism
2. Identify existing barriers and constraints to data use and effective feedback mechanisms
3. Identify existing best practices in data use and feedback mechanisms
4. Design approaches for addressing barriers and constraints to data use and feedback mechanisms
5. Develop strategies for optimal data use for program improvement
6. Determine whether the existing data use activities can improve information use at the national, provincial, district, or facility level
7. Indicate which stakeholders need to be involved in the data use processes

Methods

Draft interview guides were developed. Three guides were developed, aimed to assess (1) data users (2) decision makers and (3) data producers.

Key informants were selected based on their position in MOH and area of specialization, both programmatic (PMTCT) and data management. The strategic information and evaluation (SI&E) consultant, M&E officer, and two global health fellows interviewed 41 individuals in the following districts: Lusaka, Choma, Katete, Livingstone, and Chipata.

Each interview was conducted with one primary interviewer, and a partner to assist in note taking and clarification when necessary. Each interview was transcribed by the interviewer. A thematic analysis was conducted. Each interviewer conducted preliminary coding by categorizing the data based on the main objectives of the study. The SI&E consultant then compiled the coded data into categories and further coded the data within each category.

Results

Principal Findings

Nine health facilities, three provinces (Lusaka, Southern, and Eastern provinces), five districts (Lusaka, Livingstone, Choma, Chipata, and Katete), and two implementing and a donor partner were included in this study. The number of people interviewed at each level were as follows: national n=3, provincial n=4, district n=10, local health facilities n=19, and partners n=5.

Results indicated that there is an established standard for the data flow system to move data from the local through the national level. In addition, there is a standard for feedback mechanisms from the national level back down to the local health facility level. Furthermore, results revealed that there is a standard for data use at each level comprising (1) aggregation, (2) analysis and (3) action.

Results revealed a number of themes regarding current data use. The results indicated that data are obtained from a variety of sources, including the Logistic Report and Request (indicating how much of an item facilities have and how much they subsequently need), Health Information Aggregation 1 and Health Information Aggregation 2, and the registers. The results also revealed that data are used to examine expected targets, examine weaknesses, identify gaps, and assist staffing and workload planning.

Informants discussed that data are used, although inconsistently across facilities, as a guide for intervention development, service improvement, and service planning. Some key informants indicated that they regularly attend monthly meetings to examine and discuss data and how it can inform service delivery. Some informants discussed the inability to use data due to lack of skills, resources, and time. Some interviewees revealed that data are closely reviewed and prepared, while others have difficulty simply meeting the deadline to send information to the district health office (DHO) in a timely fashion. Interviews revealed that data are rather inconsistently reviewed at the local health facility level before they are sent to DHO.
The standard feedback mechanisms currently in place, include program performance assessment twice a year, district integrated review meetings, ongoing technical supervisory support (quarterly) from the DHO level, joint technical (quarterly) and data review meetings (biannually), data audits, and province health office quarterly meetings with DHO. In addition, local health facilities receive feedback from partners. Informal feedback also occurs, including verbal feedback, workshops and phone calls.

The data indicated that current data use activities are providing limited information at each level of the health system. Data use activities have far more potential than their current use. Interviews suggested that all levels and individuals involved with service delivery, service improvement, and service planning either directly or indirectly should be involved with the improvement of the data use process. This was suggested both within and between levels (i.e., both horizontally and vertically).

**Gaps and Needs**

A number of themes regarding challenges to data use were indicated from the interviews. Namely, poor data quality, lack of manpower and time, insufficient emphasis and/or understanding of the relationship between data and clinical practice/service delivery, lack of resources, lack of data management and analysis skills, data flow complexity, and staff’s being overburdened with the number of indicators required were noted.

In addition to the challenges to data use, a number of themes emerged from data regarding challenges in feedback mechanisms; specifically, lack of positive feedback, feedback emphasizing data errors only, feedback that occurs outside of the noted time frame, reports sent in with known errors to meet deadline, difficulty communicating information back to the health facility due to lack of resources, and insufficient time to provide effective feedback.

**Discussion**

Overall, current data use activities are providing some information at each level of the health system. But as interview data revealed, current data use activities have far more potential than their current use. However, promising practices are occurring and should be examined for possible implementation where appropriate. Local health facilities, DHOs, province health offices, and MOH are engaged in a number of practices that may increase data use to inform decision making. Some facilities discussed how their staff members review data monthly as a team to assess their local impact and improvement needs. Other facilities indicated the usefulness of a health advisory committee, wherein community members are invited to their local facility and current data are reviewed and explained by staff - allowing the community to be informed of community health data and give feedback related to service planning and improvements. One district described the notion of a “floating trophy,” wherein the local facility with the highest-quality data and performance is rewarded with a trophy for a period of time. Along the same lines, there is a current pilot project implemented by the World Health Organization wherein facilities are provided financial incentives based on performance (including data quality). At all levels, mentorship was discussed as a way to increase data use and skills needed to interpret data. Similarly, promising practices for feedback mechanisms included review of data on a consistent basis, organized meetings by the district where all required indicators would be reviewed, technical feedback, supportive supervisory assistance, data review, and audit meetings.

**Conclusions**

Based on our qualitative study, there are current data use and feedback mechanisms in place at the local, district, provincial, and national levels. However, these mechanisms are inconsistent and can provide much more information than they do in their current state.

These results suggest that there are specific challenges to data use and feedback mechanisms that need to be addressed for optimal PMTCT data use and decision making. Data from our study indicate that health workers and officials at the local, district, provincial, and national levels are acutely aware of ways to improve data use and feedback mechanisms. Based on this information, this report seeks to describe these methods and mechanisms that can realistically be put in place to address these needs.

**Priority Recommendations**

- Increase technical capacity building, including:
  - Working electronic database at all levels;
  - Transport for remote villages;
  - Available registers; and
  - Reference guides for indicators at the local facility level.
• Trainings, workshops, and ongoing supervision should emphasize the importance of data use and the relationship to service delivery
  » Trainings on data generation, analysis, management, and presentation are recommended for all levels within the health sector
• All partners and MOH are called to work together to strengthen the same data system
• There should be a dedicated staff person at each level to provide feedback
• There should be dedicated staff to provide scheduled and ongoing supportive supervisory assistance
• There should be acknowledgement of optimal performance, at all levels
• There should be mentorship and feedback from the national to local level
• Equipment should be readily available at all sites, with maintenance available to address technical needs in a timely fashion

BACKGROUND/RATIONAL FOR THE STUDY

The Elizabeth Glaser Pediatric AIDS Foundation, a nonprofit organization, is the worldwide leader in the fight against pediatric AIDS. Its mission is to prevent pediatric HIV infection and to eliminate pediatric AIDS through research, advocacy, prevention, and treatment programs.

Through its country presence in Zambia, EGPAF has collaborated with donors, local and international partners, and the Zambian government since 2002. EGPAF-Zambia, under the United Nations Children's Fund (UNICEF) Global PCA, supported the Ministry of Health (MOH) prevention of mother-to-child transmission of HIV (PMTCT) monitoring and evaluation (M&E) systems. Through the Centers for Disease Control-funded LiveFree project, EGPAF also supports the national electronic health record (EHR), SmartCare. In 2012, an updated version of SmartCare with a PMTCT platform reflecting the change in national guidelines will be rolled out nationwide.

Efforts are currently underway to migrate from a paper-based health data collection system to the EHR system around the country.
Initiatives to improve M&E systems and other data sources have grown in response to a need to track Millennium Development Goals and respond to the reporting requirements of funding agencies. Despite these advancements, data demand and information use to effectively inform policy and programmatic decision making is weak. As a result, health systems have seemingly failed to fully link evidence to decisions, leading to a reduction in the ability to respond to priority needs of the health care system.

Many factors seem to undermine evidence-informed decision making in Zambia, namely limited demand for information resulting from a pervasive lack of data ownership, decision makers being unaware of existing data sources and not having sufficient data analysis and management skills. Other likely factors undermining evidence-informed decision making include the low value placed on data by decision makers because of the perception that the quality of most data is poor and the decision makers’ lack of understanding of how the health performance data could be useful for planning. Failure to present data to decision makers in user-friendly, accessible formats also seems to affect the ease of its use in the decision-making process.

EGPAF and the Zambian MOH collaborated in identifying the current status of data use, information management, strengths and weaknesses, and needs and promising practices.

**OBJECTIVES**

The objectives of the work described here are the following:

1. Document the level of existing data use and feedback mechanisms;
2. Identify existing barriers to data use and effective feedback mechanisms;
3. Identify existing best practices in data use and feedback mechanisms;
4. Design approaches for addressing barriers to data use and feedback mechanisms;
5. Determine whether existing data use activities can improve information use at the national, provincial, district, or facility level;
6. Develop strategies to optimize data use for program improvement; and
7. Indicate which stakeholders need to be involved in the data use processes.

**METHODS AND PROCEDURES**

**Study Sites**

This study took place in three provinces of Zambia: Lusaka, Southern, and Eastern. Provinces were chosen to solicita wide and accurate representation of Zambian population. Within these provinces, five districts were covered: Lusaka, Livingstone, Choma, Chipata, and Katete (see Table 1). Nine health facilities were included in the interviews. The goal for number of interviews was 37; the final number was 41: MOH n=3, provincial n= 4, district n=10, local health facilities n=19, and partners n=5. The sites where interviews took place were in both urban and rural settings.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Total n per Area</th>
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<tbody>
<tr>
<td>Lusaka</td>
<td>8</td>
</tr>
<tr>
<td>Livingstone</td>
<td>4</td>
</tr>
<tr>
<td>Choma</td>
<td>13</td>
</tr>
<tr>
<td>Chipata</td>
<td>4</td>
</tr>
<tr>
<td>Katete</td>
<td>12</td>
</tr>
</tbody>
</table>

**Drafting the Instruments**

The interview guides were drafted by the EGPAF team (including the senior SI&E officer, technical director of SI&E, and M&E officer) and an outside SI&E consultant. Interview guides were developed to reflect current data use, feedback mechanisms, and the relevant challenges and facilitators at all levels of health in the public sector. Three guides were developed for data users, decision makers, and data producers. The guide for data users was aimed to assess department heads at the facility level, for example, facility “in charge,” maternal and child health department head. Interview questions in this guide assessed which type of, and whether, data are used to make decisions for different activities (e.g., staffing, budget, service delivery, service improvement), challenges using facility data, feedback mechanisms, and skills necessary to improve data use for decision making. The second guide was created for decision makers including district-, province-, and national-level health officials as well as partners. Questions in this guide focused on thoughts about activities and supports that improve data use, specific challenges that arise when using data for policy-/program-
related decisions, and feedback mechanisms. The third guide was created specifically for key informants who were data producers. Key informants in this category included local-, district-, provincial-, and national-level workers who have positions directly related to data collection, management, and analysis. Questions in this guide emphasized the current data flow process, feedback mechanisms and their effectiveness, and challenges to both data use and feedback mechanisms. Please see the appendix for each of the full interview guides.

Sample
A convenience sampling strategy was used to select key informants. The selection was based on position within MOH and area of specialization, both programmatic (PMTCT) and/or data management. The team selected key informants from both rural and urban settings as well as throughout different provinces. The number of stakeholders / key informants interviewed at each level are indicated in Table 2.

<table>
<thead>
<tr>
<th>TABLE 2. STAKEHOLDERS / KEY INFORMANTS INTERVIEWED AT EACH LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Health Level</strong></td>
</tr>
<tr>
<td>National (Ministry of Health)</td>
</tr>
<tr>
<td>Provincial</td>
</tr>
<tr>
<td>District</td>
</tr>
<tr>
<td>Health facilities</td>
</tr>
<tr>
<td>Partners</td>
</tr>
</tbody>
</table>

Conducting the Interviews
Semi-structured interviews utilizing the appropriate interview guide and closely following the guide questions were conducted in teams. Lynn Michalopoulos (SI&E consultant) and Mwitwa Chileshe (global health fellow) worked together in Lusaka, Choma, and Livingstone. Arthur Kachemba (M&E officer) and Lauren Smith (global health fellow) conducted interviews in Katete and Chipata. The first four interviews conducted solely by the SI&E consultant were recorded. However, many of the initial key informants displayed concern about recording and were hesitant to record the interviews. Because of this, the remaining key informant interviews were not recorded, but both researchers were able to take detailed handwritten notes of responses.

Analysis
A thematic analysis of the interview data was conducted. After each interview, both researchers transcribed the information into a Microsoft Word document based on detailed handwritten notes. The researcher who conducted the interview did an initial coding of the data within the Word document. The initial codes were based on the following objectives of the study: (1) current data flow mechanisms, (2) current feedback mechanisms, (3) current challenges to data use, (4) current challenges to feedback mechanisms, (5) best practices of data use, (6) best practices of feedback mechanisms, (7) how to address data use challenges, (8) how to address feedback mechanism challenges, and (9) who should be involved in the data use process. Initial coding was then reviewed by the SI&E consultant as a form of triangulation. After the initial coding, data were compiled and labeled into the aforementioned themes. Within each theme, data were also compiled according to level (i.e., national, province, district, partner, and local). Themes were collapsed into groups based on common content. Similar or redundant themes were categorized together. Initially, overall themes that emerged by each objective were noted. However, a secondary data analysis was conducted to assess any differences or commonalities between each level of the public health sector for the specified objective. The Microsoft Word comment feature was utilized for initial and secondary analyses. Overall results are presented, as are results specific to each level where substantial differences were noted.
**PRINCIPAL FINDINGS**

Standard Data Flow Mechanisms

The indicated standard for data flow is as follows:

1. Patient information is handwritten into the register at the local level.
2. Tally sheets are updated by hand.
3. Information is then handwritten into the Health Information Aggregation 1 (HIA1), which reflects services; and Health Information Aggregation 2 (HIA2), which reflects disease aggregation.
4. HIA1 and handwritten information are sent to the DHO on the 7th of the second month.
5. DHO validates the data and sends them back to the local facility if there are inconsistent and/or missing data.
6. If the data are determined to be valid, M&E at the DHO level enters the information from HIA1 and HIA2 into the Health Management Information System (HMIS) database.
7. Data from the HMIS computer are sent electronically to the provincial health office (PHO) by the 13th of the second month. M&E at PHO imports data from all DHOs.
8. M&E at the PHO level then validates the data.
9. On the 5th of the third month PHO sends data to M&E at MOH.
10. MOH validates the data.
11. MOH gives feedback in table format to PHO and DHO, which indicates which facilities are doing poorly.

The standard of data use throughout all levels is based on aggregation, analysis, and action. Aggregation refers to pulling the data together. Analysis includes making sense of the data as well as creating graphs and charts to increase the ability to understand trends. Finally, action refers to interventions, planning, service improvement, and budget allocation.

**FIGURE 1: STANDARD DATA FLOW AND FEEDBACK PROCESS.**
Current Data Use Activities

Local Health Facility Level

“We look at our target population and the indicators, for example, the expected number of deliveries for each month. And according to our target population, as we compile data for the monthly reports, we look if we met the targets or not. Then we identify weaknesses and see how we can address them.” —Interviewee

At the local level, some facilities indicated the use of data to understand targets and to identify weaknesses and ways to address them. Others reported that they rarely used data to inform their work and rarely reviewed the data as a team, due to a number of challenges (see Existing Barriers and Constraints to Data Use section below). In addition, some facilities utilized data, although inconsistently, to direct activities, allocate the budget, and plan services. Overall, facilities revealed that information is typically gathered from the registers, Report and Request, HIA1 and HIA2, SmartCare computers, and HMIS. Regardless of the degree of data use, respondents in management positions at the local level overwhelmingly indicated the usefulness of data to inform clinical service delivery.

District, Province, and National Level

 “[We] look at data where we are and where we are not doing fine and look at targets and objectives. We are okay with data use but the health facilities have a problem.” —Interviewee

“It means whatever decision we make it is closer to reality. ... If you have good data ... you will have something that is closer to what is on the ground.” —Interviewee

At the district, province, and national levels, key informants revealed that data from HMIS, registers, and observation, as well as national data, are routinely used. HMIS is frequently used at these levels to compare which facilities and districts are performing well and which are in need of improvements. In addition, DHO/PHO respondents reported that data are also obtained from district/province resources. Similar to agencies at the facility level, DHO, PHO, and MOH use data to help prioritize planning, evaluate achievements, and plan for staffing needs and required trainings at the specified level.

Feedback Mechanisms

Local Health Facility Level

“[Feedback] encourages us to perform better.” —Interviewee

“Feedback is especially good from the outside because when you live in a place for a while everything starts to look normal.” —Interviewee

The data revealed standards for feedback mechanisms at the local health facility level. Namely, a district integrated review meeting where DHO provides feedback on the performance of the local health facilities. At this meeting, local health facilities receive clarification on required indicators. Data management and data collection information is discussed, and data from other facilities are often presented for best practice sharing. DHO looks at the performance of facilities and the challenges they are facing. Local facilities meet as a group at DHO for this feedback. In addition, performance assessment occurs twice a year, wherein facilities are given written feedback from DHO on their performance, current standards are presented and explained, and recommendations are given. Interviews indicated that some health facilities receive informal verbal feedback and often call DHO for technical assistance and support. Conversely, many facilities reported that they rarely received feedback from the district level.

District, Province, and National Levels

“Yes we receive feedback. When program officers notice some data quality issues or inconsistency in figures they follow up with the information office to verify the reported data. Feedback is also received from the provincial health office on data quality and completeness of reports. ... This is mostly done during the provincial data review and cleaning meetings which are held quarterly.” —Interviewee

“Sometimes there are areas we think we are doing fine ... but with feedback (we learn that) maybe this is not the case.” —Interviewee
Data from the district, province, and national levels indicated that feedback is received through reports, workshops, meetings, and supportive supervisory visits. In addition, written feedback through reports and verbal feedback in person or via phone are received both within each level and from the immediate higher level of the health sector. Both DHO and PHO have a quarterly integrated technical review meeting where district and provincial data are reviewed and evaluated in terms of progress made in obtaining objectives from action plans. In addition, DHO and PHO have a biannual data audit/review meeting where there is peer review, data use for planning, data auditing/cleaning, and performance feedback to districts and provinces.

**GAPS AND NEEDS**

Existing Barriers and Constraints to Data Use

A number of themes regarding challenges to data use emerged; poor data quality, lack of manpower and time, insufficient emphasis and/or understanding of the relationship between data and clinical practice/service programming, lack of resources, lack of data management and analysis skills, data flow complexity, and staff overburdened with the number of indicators required were noted.

**Local Health Facility Level**

“You can’t stop patient flow. So you have to do the reporting and compiling of reports during the night by lamp.” —Interviewee

“We still need the basics. For example, in a recent storm our roof blew off and all the paper charts and registers were soaked and ruined. If we could store data in an electronic format, this would help greatly.” —Interviewee

“It is rare for us to review the data in-house before sending to the DHO. Especially since we have the cleaning staff doing data entry. We will send the reports along with errors in order to meet the submission deadline. We are aware that we are supposed to do a data review, but there is a lack of manpower.” —Interviewee

“Only one person per center has been trained in HMIS. ... It is very difficult to understand data.” —Interviewee

There were a number of themes regarding challenges to data use that emerged at the local health facility level, namely, a lack of manpower, skill, and time to devote to data collection, management, analysis, and implementation. A number of facilities noted that when they do have time to analyze data to inform decision making they lack the necessary resources to appropriately make changes. The lack of manpower and time often leads to missing and/or poor-quality data, which negatively affects its use in decision making. In addition, local facilities noted a lack of resources, that is, no computers, computers with viruses, lack of registers, and no electricity.

Furthermore, facilities noted that there are a number of indicators required from MOH and partners that are often not understood. A number of health facilities revealed that up to 200 indicators were required. Health facilities noted that often indicators were requested using medical terms that facility workers did not understand. This results in poor-quality as well as missing data.

**DHO Level**

“Officers in the field bring data late. ... If data is received late we submit recommendations or budget request but this would not be accurate. ... Other programs are affected, because when outreach in community need more funds what this is based on is inaccurate.” —Interviewee

“A lot of the times [the health facility] will not report if the stat is 0. ... They don’t realize that a zero statistic says something as well [leaving it blank].” —Interviewee

“It delays decision making and progress. ... Cannot make decisions with inaccurate or delayed data.” —Interviewee

Similar to some of the challenges noted at the local health facility level, the district level emphasized a lack of manpower, poor-quality data, and a lack of reliable data as significant challenges for data use. In addition, the district-level informants stated that late reporting is a major concern that affects informed and evidence-informed decision making. The analysis also revealed that health facility workers often do not have the necessary skills to interpret and understand data.

Moreover, the results indicated that there is little importance placed on the relationship between data use and clinical services at the local health facility level.
Province Health Office Level

“Data quality issues - inconsistencies, completeness, etc. Sometimes districts report different figures each time they are requested to provide data for the same indicator in a given reporting period. Timelines in reporting are one challenge the district is facing. That is, reports are not received early from health facilities and hence districts also delay in the submission. Stock outs of data collection and reporting tools and lack of registers for certain program areas, insufficient manpower is another. As a result, not all critical data elements are documented in standard registers and this affects the quality of aggregated data.” —Interviewee

Similar to challenges at the local and district levels, provincial challenges to data use included limited resources, lack of data quality, and delayed reporting received from the district level. However, at the provincial level there was a clear theme of poor-quality data as a result of the limitations of skill and manpower at the district level. In addition, the provincial-level results also emphasized the lack of data sharing between PHO and partners and how this limits the full potential of effective data use.

Partner Level

“Need to work on the mindset of colleagues on the ground so they don’t look at strategies related to a specific partner but as a total whole—staff don’t think of partners as an employer.” —Interviewee

The results revealed that health facility staff often viewed partners as a separate entity from the district, province, and national levels. The data indicated that this perception often led to a lack of importance placed on data activities and strategies implemented by partners. In addition, partners noted that poor data quality from the facilities was often a result of a lack of resources.

National Level

“We have issues to do with the report completeness, data quality attended to, also have timeline when each level is supposed to submit data.” —Interviewee

“MOH need strengthening of reporting system and data-sharing so it can be meaningful ... not just ‘my data.’” —Interviewee

“Difficulty with partners [who] come in with certain information and initiatives for a couple of years but then they leave and programs go with them ... so capacity building [is] very important. ... There should be a platform for data sharing. ... Data is of no use if it cannot be shared with anyone.” —Interviewee

Data from MOH indicated similar issues related to timeliness, poor data quality, missing data, and lack of financial resources. In addition, there was a common theme that emerged from the data related to lack of data sharing within the level, between levels, and between all levels and partners. An emphasis on a silo effect in terms of data use was discussed. This was noted to negatively affect the ability to use evidence-informed decision making at all levels. Partners obtaining indicators directly from the local health facility was a challenge as the data were not allowed to go through the standard data flow process of cleaning at each level, leading to inconsistent figures between partners and MOH.

Existing Barriers and Constraints to Effective Feedback Mechanisms

Overall, a number of challenges were noted related to feedback mechanisms across levels, namely lack of positive feedback, feedback emphasizing data errors only, feedback that occurs outside of the noted time frame, reports sent in with known errors to meet deadline, difficulty communicating information to the health facility due to lack of resources, and insufficient time to provide effective feedback.

Local Health Facility Level

“Previously we used to get feedback. But recently we haven’t received feedback recently in this last year. We just submit and then we forget. For example, I was going through the data on my own and I discovered a mistake that was made, and I was waiting to hear from the district about that error, but I never heard anything.” —Interviewee
“We only get feedback if there are errors through a written notice. They don’t come to tell us if we’ve done well. I would like positive feedback from the DHO.” — Interviewee

“We produce this data but not given feedback on how it is being used.” — Interviewee

At the facility level, a common theme that emerged was lack of resources, especially transport, as well as a limited amount of feedback received in general. When feedback was received, many facilities noted that it emphasized errors only. Conversely, where the facility was performing well, this was not noted. Finally, facilities expressed a desire to receive feedback about what happens with the data after they are submitted from the health facility level in terms of policy and programmatic changes.

**District, Province, and National Level**

“When you give feedback most of the time health facilities will not look at it as a team and most of the time feedback is not disseminated to other staff and not acted on it.” — Interviewee

“Sometimes the performance assessment is delayed and the report comes only a few months before the next one is due - so it is hard to implement recommendations.” — Interviewee

“Lack of resources, connectivity, some districts don’t have internet, so some cannot get a report, sometimes we have to send to the PHO, then DHO and they have to deliver... causes delays.” — Interviewee

At the district-, provincial-, and national-levels, lack of financial and material resources as well as limited manpower were noted as common challenges to feedback mechanisms. For example, a number of DHO staff mentioned technical supervisory support was difficult to provide during the rainy season to remote facilities that do not have internet or phone service. Further, district, provincial, and national staff noted that facilities often did not see the importance of reviewing feedback that was provided. It was commonly noted that consistent feedback was a challenge when data were not submitted in a timely fashion. This would affect the accuracy of recommendations based on the data at a certain time period. Finally, it was noted by partners and MOH staff that there are often many priorities, which can make feedback difficult to transmit, as it is difficult to prioritize.

**DISCUSSION**

Promising Practices for Data Use

Although there are a number of challenges to data use that emerged from this study, there were also a number of promising practices related to data use that are currently taking place in all levels of the health sector.

**Local Health Facility Level**

“There are 15 different registers. Mainly the nurse prepares the reports, and sometimes the cleaners help. We then consolidate the reports and look at weaknesses. We look at public health flags, disease trends and try to figure out what are the causes and what do we want to achieve. Every month we review the data and see if what we are doing is having an impact or if we are improving.” — Interviewee

“We also call on opinion leaders from the community and we explain the facility data to them from quarterly reports—this is called the Health Center Advisory Committee. We present charts and have subcommittees on specific topics. We work together with the community to discuss the way forward. This serves as the link between the facility and the community.” — Interviewee

“Data about what is happening at the facility is given in clinical and staff meetings. Usually we discuss new approaches or share information if someone went to a workshop.” — Interviewee

Some facilities had a monthly meeting specifically conducted to discuss data and inform their clinical work. Others routinely discuss data in clinical and staff meetings. Further, the Health Center Advisory Committee is a promising practice that involves community members and seems to give the facility staff a critical role in interpreting and disseminating data related to the health of their community. In addition, the Performance-based Financing Project from the World Health Organization has been implemented.
providing recommendations and strategies for optimal use of data for program improvement

AN ASSESSMENT to identify FACILITATORS AND BARRIERS to patient data use in ZAMBIA
in some districts and is a financial incentive for facilities based on their quantity and quality of services. It started in 2009 and has operational standards to improve quality patient care. Money is received based on the quantity and quality of services (according to the standards for nine indicators).

**District, Province, National, and Partner Level**

“Through the information office we have access to facility reports, we go to the center to access information from the facility. ... This opens up your mind and helps you feel more confident.” —Interviewee

“We are centrally located- not in the field- so I noticed that there were problems with getting the data to us so I made decision that we should have people in the field to be there. ... We are working on getting this implemented by the end of this year.” —Interviewee

“Every month when we get data from the field we have a standard analysis form developed together with the technical staff, we share together with all who are interested. ... Once look at data come up with a plan, make sure all variables are related ... outline the service delivery gaps based on data, make sure we have someone to follow up on the gap AND give a timeline on the activity and can usually see some improvement.” —Interviewee

At the district, provincial, national, and partner levels there are a number of promising practices that have been implemented: specifically, data sharing between and within the districts, provinces, and so forth; opening up access to data to all appropriate staff; and understanding and addressing gaps. In addition, a number of partners discussed the importance of the dissemination of data through conferences and workshops to increase promising practices related to data use. Further, the emphasis on building on the strengths of different individual skills to make a more productive whole was noted as a practice that can be implemented at all levels.

**Promising Practices for Feedback Mechanisms**

At all levels, promising practices for feedback mechanisms are currently in place, including meetings which include all facilities in a district to review data use and performance. This is also a way to determine model sites where promising practices can be shared among facilities. Mentorship and supervisory support with a hands-on approach were valued and noted as methods to improve the quality of feedback. Furthermore, a “floating trophy” among facilities may be an effective tool that can be implemented on a district and provincial level, based on data quality submitted.

“Yes. Sometimes the District will organize meetings and pull some staff from each center and we will review the data from each center and we will see how each facility is doing compared to the other.” —Interviewee

“Yes mentorship is very effective because it is done on one to one basis.” —Interviewee

“If there is a need for a program to be implemented our team will provide feedback. If one province is doing well, we will replicate what they are doing for the new program.” —Interviewee

“The province conducts regular integrated technical and data audits meetings, where best performing districts are awarded floating trophies. This initiative has motivated staff at the district and facility level to put more efforts in their work.” —Interviewee

**CONCLUSIONS**

**Existing Data Use Activities to Improve Information Use**

This qualitative study was an examination of current data use in the PMTCT sector in Zambia. Based on the findings, current data use activities are generating some information, but not widely enough in their current state. The results from the 41 key informant interviews suggest that data use in the Zambian PMTCT sector has far more potential than it currently embodies. Results indicate that health facility staff members are overburdened with indicators, there is a lack of manpower, and data management and analysis skills are limited. Further, data from the study indicated that the current data flow mechanisms are inconsistent and the feedback mechanisms are not effective. The results suggest both incomplete and poor-quality data throughout all levels, which affects policies and service delivery. In addition, the results indicate little understanding of the
connection between data use and how it informs direct practice. This is critical as it suggests the current lack of data use for quality improvement in the PMTCT sector.

Stakeholders Involved in the Data Use Process

“Involve more clinical officers and medical officers in data use and analysis, not just at the ‘in charge’ level, but for all levels of clinical staff.” —Interviewee

“[Data] for program evaluation can be improved e.g. involving all facility staff and district program officers in training for improving data analysis and interpretation of indicators.” —Interviewee

To address some of the data use challenges and constraints, key informants were asked who should be involved in the process. The data revealed that facility-, district-, province-, and national-level health workers consistently believed that all health facility workers involved with service delivery, service improvement, and service planning—either directly or indirectly—should be involved in the process to improve data use and feedback mechanisms.

RECOMMENDATIONS

Based on the findings from the current study, the following are recommendations tailored to all levels of the public health sector. In addition, recommendations are also noted for partners of MOH.

Addressing Barriers and Constraints to Data Use

Based on the results of this study, EGPAF recommends the following strategies to address barriers and constraints to data use:

1. Technical capacity building should occur. This should include an increase in resources, registers, and working electronic databases at all facilities. This should be guided through an MOH-led strategic plan, allocating funds.

2. An indicator reference guide and/or an indicator dictionary guide with specific guidelines, definitions, and data entry protocol for each indicator should be developed. This should be available at each facility. This can be developed by MOH or the partner (i.e., SmartCare indicator guide developed by EGPAF, HIA1 and HIA2 developed by MOH).

3. The number of indicators required should be reduced. Partners and MOH can work together to establish a core list of indicators.

4. Trainings and workshops on data use and the importance of evidence-informed decision making for clinical practice should occur. MOH and partners can work together to develop ongoing district-level trainings (e.g., quarterly).

5. Consistently held intensive trainings should occur at all levels of the health delivery system on data generation, analysis, management, and presentation. There should be a designated staff person at each level who is responsible for ensuring the completion of data analysis and training of all appropriate staff. This training can be developed by higher-level data management staff at the PHO or MOH level as well as with partners.

6. Partners and MOH should work together to strengthen the same data flow system. This should entail communication between partners and MOH regarding required indicators and potentially developing combined tools for data collection. In addition, a task force can be established to attempt to shorten the data flow system and decrease the time in which feedback is received.

7. There is a need for an increase in the number of health facility staff members with data management skills. MOH should develop a strategy to increase staff, with a clear emphasis on data entry clerks at the local health facilities and data management staff members at the DHO level.

8. MOH should work with PHO to develop a guide with required monthly staff and clinical meetings where indicators, data systems, and data use are reviewed relating to the specific facility or district. During these meetings, minutes should be taken and referred to for future use.

Addressing Barriers and Constraints to Feedback Mechanisms

Based on the results from this study, EGPAF recommends the following strategies to address barriers and constraints to feedback mechanisms:

1. DHO need regular transport to visit health centers and provide technical support to improve data use and quality. Partners who regularly visit health centers can provide transport for DHO.

2. Regular technical support and routine data cleaning at the site level should occur. This can be increased with guidelines established for ongoing and frequent supportive supervisory assistance. In addition, if all levels are receiving ongoing data management and analysis trainings, the supervisor should be able to provide this type of support at the facility level for regular and timely data cleaning.
3. There should be a dedicated staff person at each level who provides supervision and feedback specifically related to data use. Local health facilities discussed the need for both formal feedback mechanisms (through written reports and graphs that are explained to the facility members at an established time) and informal feedback mechanisms (ongoing availability for phone consultation and site visits to provide hands-on technical assistance). MOH should designate this person at each level who will provide supervision and feedback.

4. Performance assessments should occur more frequently. The designated staff person who provides this feedback should be allotted the necessary amount of time to sufficiently complete the assessments.

5. Local health facilities should receive ongoing feedback including acknowledgment of what is working well in terms of their performance.

6. Feedback should occur not just from the most immediate level above. Local health facilities should receive feedback from the PHO and MOH levels. Also, if changes occur that will affect the local level, health facility workers should be involved in this process through focus groups, written questionnaires, and so forth.

**APPENDIX**

<table>
<thead>
<tr>
<th>TABLE A.1. REPORTS AND NUMBERS OF INDICATORS</th>
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<tbody>
<tr>
<td>Report Name</td>
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<tr>
<td>Health Information Aggregation 1</td>
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<td>President’s Emergency Plan for AIDS Relief Report</td>
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<tr>
<td>Number of Indicators</td>
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**INTERVIEW QUESTIONNAIRES**

**KEY INFORMANT INTERVIEW QUESTIONNAIRE: DECISION-MAKER**

**Version 1: National and Sub-national**

**About this interview—and why your participation is so important**

**Interviewer**

My name is ______________________. I am from Elizabeth Glaser Pediatric AIDS Foundation (EGPAF). We are conducting an assessment to identify facilitators and barriers to health data use, and will provide recommendations and strategies for optimal use of health data for program improvement. Your participation is completely voluntary and you can stop participation at any time. We will not collect any names or other personal information at any time. Your employer will not know about your responses. The results will be stored in a password secured computer with access limited to the main evaluation experts. You will not have any direct benefits from the interview. However, you will contribute to the improvement of patient care and health programs in Zambia. This study has been reviewed and approved by the Biomedical Research Ethics Committee.

If you have any questions regarding this assessment please call Dr. Vincent Ahonsi on (0964-696722)

Name of Interviewer________________________________ Signature of Interviewer____________________________________________________

Date:____/____/____

**Respondent**

I understand the information that has been given to me, and the purpose of the study has been fully explained to me. I have had an opportunity to ask questions and all my questions have been answered to my satisfaction. I also understand that my rights and privacy will be respected. I consent voluntarily to participate in this study.

Participant Unique Code:________________________ Signature of participant:________________________

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<td>Title of Respondent</td>
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<td>Number of years in this position</td>
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| Specialization (check all that apply) | ☐ Malaria or Infectious Diseases  
☐ Maternal and Child Health  
☐ HIV/AIDS/TB  
☐ Health Information Management  
☐ Others (Specify) __________________________ |
| Level                | ☐ National  
☐ Province  
☐ District |
| Responsibilities (check all that apply) | ☐ Program management  
☐ Medical supply and drug management  
☐ Health planning  
☐ Health policy formulation  
☐ Human resources management  
☐ Monitoring & Evaluation  
☐ Public Health Management  
☐ Hospital Management  
☐ Others (Specify)__________________________ |
1. Are you involved in making or influencing any kind of decisions?

2. What information do you use to make these decisions?

3. In general, do you feel that your department/unit have the skills necessary to use data in order to help with the kind of decisions that you are involved in?

4. In your current position, do you feel data is effectively used for program monitoring and implementation? If yes, for which purpose?

5. What kind of support do you think will help to improve data use at your level of health care delivery system?

6. What activities can improve data use at your level of health care delivery system?
### INTRODUCTORY QUESTIONS

#### CONSTRAINTS

| 7. | What challenges do you experience in making policy or program-related decisions? |
| 8. | What specific challenges have you experienced using data for policy or program-related decisions? How can we deal with these challenges? |
| 9. | Does the source of data affect your using it for decision making process? |
| 10. | How do you rate the quality of health data available for use for decision making? |
|     | (1: Poor, 2: Fair, 3: Good, 4: Very good, 5: Excellent) |

| 1 | 2 | 3 | 4 | 5 |

Does the quality of health data affect its use for decision making?

| 11. | What is your experience with data sharing at your level of health delivery system? |

- MOH-PHO
- PHO-DHO
- DHO-HF
- MOH-MOH
- PHO-PHO
- DHO-DHO
HEALTH MANAGEMENT INFORMATION SYSTEM STAFF INTERVIEW QUESTIONNAIRE

About this interview—and why your participation is so important

Interviewer

My name is _____________________ I am from Elizabeth Glaser Pediatric AIDS Foundation (EGPAF). We are conducting an assessment to identify facilitators and barriers to health data use, and will provide recommendations and strategies for optimal use of health data for program improvement. Your participation is completely voluntary and you can stop participation at any time. We will not collect any names or other personal information at any time. Your employer will not know about your responses. The results will be stored in a password secured computer with access limited to the main evaluation experts. You will not have any direct benefits from the interview. However, you will contribute to the improvement of patient care and health programs in Zambia. This study has been reviewed and approved by the Biomedical Research Ethics Committee.

If you have any questions regarding this assessment please call Dr. Vincent Ahonsi on (0964-696722)

Name of Interviewer___________________________ Signature of Interviewer___________________________

Date:____/____/____

Respondent

I understand the information that has been given to me, and the purpose of the study has been fully explained to me. I have had an opportunity to ask questions and all my questions have been answered to my satisfaction. I also understand that my rights and privacy will be respected. I consent voluntarily to participate in this study.

Participant Unique Code:___________________________ Signature of participant:___________________________

Date:____/____/____
**INTERVIEW LOGISTICS**

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<td>Title of Respondent</td>
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| Facility type (check one) | ☐ Referral hospital  
☐ District Hospital  
☐ Health centre (hospital affiliated and other health centers)  
☐ Health post/dispensary  
☐ Other (specify): __________________________ |

**SECTION 1: DATA AND INFORMATION FLOW**

1. 1. Please describe your role in data management.

2. Please describe the current data flow system.

3. 3. Has the current data flow system changed in the past year? If so, in what way?
### SECTION 2: DATA USE AND FEEDBACK MECHANISMS

4. Is data used to inform managerial, administrative or clinical decisions?  ☐ Yes  ☐ No  
   If yes, please specify how it is used and by whom?

5. Do you receive feedback from other staff or DHO about data/reports you submit/store?  ☐ Yes  ☐ No

6. What feedback mechanisms are currently in place?

7. How effective are the current feedback mechanisms?
SECTION 3: CONSTRAINTS TO DATA USE

8. What are the main challenges to data use from your perspective?

9. What are the main challenges to effective feedback mechanisms?

10. How do you think these challenges that you named can be addressed?

11. Do you have any suggestions about how to improve data use?

12. Do you have other suggestions for effective feedback mechanisms related to data management that are not currently in place? Please describe.

13. I have asked all of the questions that I have. Is there any additional information that you would like to add?
# HEALTH FACILITY INTERVIEW QUESTIONNAIRE FOR FACILITY AND DEPARTMENT HEADS

## About this interview—and why your participation is so important

### Interviewer

My name is _____________________ I am from Elizabeth Glaser Pediatric AIDS Foundation (EGPAF). We are conducting an assessment to identify facilitators and barriers to health data use, and will provide recommendations and strategies for optimal use of health data for program improvement. Your participation is completely voluntary and you can stop participation at any time. We will not collect any names or other personal information at any time. Your employer will not know about your responses. The results will be stored in a password secured computer with access limited to the main evaluation experts. You will not have any direct benefits from the interview. However, you will contribute to the improvement of patient care and health programs in Zambia. This study has been reviewed and approved by the Biomedical Research Ethics Committee.

If you have any questions regarding this assessment please call Dr. Vincent Ahonsi on (0964-696722)

Name of Interviewer___________________________ Signature of Interviewer__________________________

Date:____/____/____

### Respondent

I understand the information that has been given to me, and the purpose of the study has been fully explained to me. I have had an opportunity to ask questions and all my questions have been answered to my satisfaction. I also understand that my rights and privacy will be respected. I consent voluntarily to participate in this study.

Participant Unique Code:___________________________ Signature of participant:______________________

Date:____/____/____
## INTERVIEW LOGISTICS

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<td>Title of Respondent</td>
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### Name of facility (if applicable)

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## RESPONDENT BACKGROUND INFORMATION

Before we start the interview, I would like to record some background information.

1. What is your job title?

2. How long have you been in your current position?

3. Do you supervise any staff at this facility?  ☐ Yes  ☐ No
**RESPONDENT BACKGROUND INFORMATION**

I would like to begin by asking you about your job responsibilities.

1. In your position what kind of decisions do you make (probe for the following):
   a. Budget preparation/allocation
   b. Staffing decisions
   c. Medical supply and drug management
   d. Planning clinical services
   e. Service improvement (HIV, AIDS, TB, MCH, Drug logistics, infectious diseases)
   f. Other (list and tick as above)

2. For the decisions you make what data do you use
   a. Budget preparation/allocation
   b. Staffing decisions
   c. Medical supply and drug management
   d. Planning clinical services
   e. Service improvement (HIV, AIDS, TB, MCH, Drug logistics, infectious diseases)
   f. Other

**SECTION 2: DATA USE CONSTRAINTS**

1. Has your current way of data use changed in the past six months? In the past year? If so, in what way?

2. In what way has the current use of data impacted this facility/department/organization (both positive and negative outcomes)

3. What challenges do you face when using facility data for decision making?

4. Is there a system in place to provide feedback about these challenges to the responsible personnel? If yes, what system(s) do you use?

5. Do you feel that your skills need to be improved upon to be able to use data to make the kind of decision you are involved with?
SECTION 1: INFORMATION USE FOR DECISION MAKING

6. What kind of training would you require to improve your skills in data use for decision making?

7. Does your facility hold meetings where data is presented & reviewed? If yes how often does this hold?

8. What are the other ways in which data is made available to support your decision making?

9. Does your facility receive feedback from management, DHO, PHO or others about the facility’s performance? If yes, please describe how and what feedback is provided?

10. Has the feedback improved your job performance? If yes please describe.

11. Do you have suggestions for effective feedback mechanisms that are not currently in place? Please describe.

12. Does your facility have any suggestions about how to improve data use at your facility/dept/organization? Who should be involved in the improvement process?

13. I have asked all of the questions that I have. Is there any additional information that you would like to add?