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MINISTRY OF HEALTH - ETHIOPIA

ETHIOPIA DUP | DATA USE PARTNERSHIP

INFORMATION REVOLUTION (IR) SUCCESS STORIES

PREPARED BY: MINISTRY OF HEALTH IN COLLABORATION WITH
DATA USE PARTNERSHIP (DUP)

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Contents

Optimizing Performance Monitoring Teams to Improve Data Quality and Use: A Case Story from Zewditu Memorial Hospital

In early 2019, the health data management team at Zewditu Memorial Hospital, an Ethiopian healthcare service provider, spotted a startling data inconsistency. The total number of recorded deaths in an inpatient ward did not match the morgue's register. Upon further examination, the team revealed a pervasive problem that spanned from issues in staff capacity to larger organizational dilemmas. While the discovery was worrisome, it ultimately allowed the hospital to re-examine its data practices and reinvigorate old systems for the better.

UNCOVERING HARD TRUTHS

Seeking to understand the extent of the hospital's data discrepancies, Zewditu's Planning, Budgeting, Monitoring and Evaluation Directorate (PBMED) conducted an in-depth analysis that found data quality at the hospital was at a mere 41%. Moreover, only 4% of the departments were reviewing their data and using it for planning and decision-making.

Behind the poor data quality, PBMED also discovered a large knowledge gap among staff. Around 60% of staff who worked on data collection lacked the proper training on data management and only 4% of the workforce had the required data skills and knowledge.

Ahlam Mohmound, Director of PBMED who is behind The Revision of PMT

Consequently, staff made frequent data recording and reporting errors and PBMED found that 66% of submitted reports were incomplete and late.

Besides ill-equipped staff, each department also lacked an internal review and verification process. Staff submitted monthly reports, often incomplete and inaccurate, directly to the PBMED without prior review or approval from the department or directorate head.

PBMED would then grapple to gauge data quality from the reports and present an aggregated report to the Performance Monitoring Team (PMT) –a monthly management meeting, chaired by the hospital's chief executive officer and medical director. The primary goal of the PMT was to review and analyze hospital performance and to develop any action plans needed for course correction.

For most members; however, the PMT meeting was where they would first learn about their respective units' reports. Members felt "caught off guard," says Ahlam Mohmound, Director of PBMED. Some members would react with denial and defensiveness, which according to Ahlam, contributed to the ineffective implementation of the PMT's data-driven and evidence-based actions. Outside of the monthly meetings, there was no platform for departments and directorates to share information and collaborate on PMT action items. "PMT was being held only for the sake of holding it. It had no major result," recalls Ahlam.

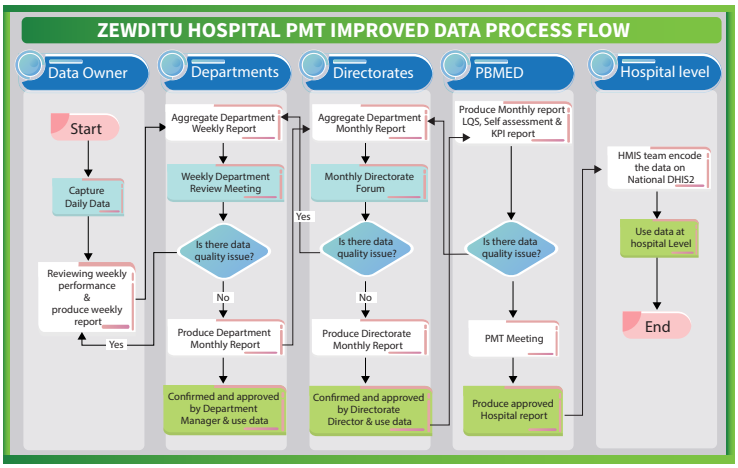
PRIORITIZING ROOT CAUSES

Following its analysis, PBMED created a Quality Improvement (QI) team – a task force drawn from PMT and health management information system (HMIS) section - dedicated to uncovering the underlying reasons behind the hospital's data issues and devising potential interventions. The QI team conducted several rounds of brainstorming sessions with several relevant staff. Using a Fishbone Diagram – a survey tool used to determine causal factors – the team identified several root causes. One example was poor data recording because registers and summary sheets, where staff record data, was in short supply. "To make up for the shortages, we used to prepare [our own] register which usually missed out some data elements. That played big part in undercutting the data quality," says Hana Obse, Head of Minor Surgery Department.

Other issues included lack of training for staff and their inexperience in data elements; absence of feedback mechanisms; disorganization at the different levels; and lack of accountability. The QI team organized all of the discovered root causes into six categories: timeliness, accuracy, integrity, reliability, completeness, and data use.

Because of limited resources, the QI team prioritized each root cause in order of importance. Poor data use, lack of training, poor organization, and lack of accountability were prioritized for immediate interventions.

IMPLEMENTING CHANGE



To help standardize data collection and prevent the use of makeshift registers, standard data collection tools, like registers and tally sheets, were distributed in April 2019 to allow staff to perform daily data entry. "It reduced the practice of entering several data later, which contributed significantly to improving data quality," says Hana. Data recording and reporting procedures were restructured and streamlined. Job descriptions were also revised to better represent and clearly articulate staff responsibilities around data within their department and allow for increased accountability.

To improve understanding among staff and strengthen their capabilities, both management and staff received training on health data management. As a means to encourage further skill development and knowledge sharing, each department established a learning platform called 'Peer Discussion Group.' Twice a month staff participate in a learning session that focuses on various health management information system (HMIS) policies, guidelines, and best practices.

Addressing the data flow gap in reporting was also a top priority for the QI team. Monthly summary sheets were revised to reflect who is responsible at each step of the process during data collection, approval, and confirmation. Departments began reviewing their data on a weekly basis to analyze and use for decision-making before sending on to the next level. Zewditu also instituted a Directors Forum, an additional monthly checkpoint at the directorate level to measure the veracity of submitted reports and data quality and use before they are sent to PBMED. Currently, PBMED cannot accept reports that are not approved and confirmed by the head of the department and director of the directorate respectively.

The new data flow reorganized the previously chaotic process and ensured active engagement of all stakeholders. It also created more capacity for PBMED, which had the opportunity to repurpose its roles. The new process also interestingly, revitalized the PMT and reconnected it to its initial purpose of ensuring the hospital's strong performance.

ACHIEVING RESULTS

HIT Expert at PBMED, working to review and analyze Data

PBMED deployed a customized Data Quality Assessment (DQA) tool and customized excel based dashboard to assess outcome of the interventions. Just three months into the intervention, data quality at the hospital rose to 77% from the baseline of 41%. Another quarter later, it continued to improve to 80.3% and Zewditu is on track to achieve 90% data quality by the end of March 2020. Concurrently, data demand and use among departments also surged to 75% from 4%.

The PMT meetings, previously symbolic, began to have a clear purpose. Its members, who are a part of their unit's data review, began showing a greater sense of ownership and accountability to their respective data. This new energy infused the team with a more collaborative spirit and creative approach towards tackling issues.

The swift cultural shift in data practice at all levels of the hospital is noticeable. "Now everyone believes that work not recorded is work not done," says Zerihun Ababo, Head of Maternity Department. According to Zerihun, all staff internalized the understanding that data is as important as "the job itself."

In addition to the internal transformation around data practice, Zewditu's successful data quality and use intervention has become a panacea to revive PMTs across health facilities, which are largely known to be unproductive. Zewditu is currently supporting five different hospitals in Addis Ababa to help reboot their PMTs and improve their data quality. Through its experience, Zewditu can be a learning model for other facilities. Data interventions that carefully target the root causes at all levels, will not only improve data quality and use, but also have the ability to transform seemingly rigid fixtures, like staff culture and PMT forums, into valuable assets that further advance performance.

The Ethiopia Data Use Partnership (DUP) has been behind this work by providing a particular support to the hospital with the aim of making it a learning facility to expand the lesson to other hospitals in the country.

The Ambassadors of Mothers:
How information recast a problem into a local innovative solution

Hayal Ali at Mugo Health Centre for ANC

The Cause

In Ethiopia's West Azernet Berbere woreda of the Silte zone, health workers were puzzled. A mother, who had faithfully shown up at one of the woreda's health centers for all her antenatal care (ANC), missed her delivery appointment and instead, gave birth at home. The health workers providing her care reported the strange case.

Shukureto Ababiya, the Woreda Health Office (WorHo) head, took the report seriously and reviewed the woman's information and history. He discovered that she had not missed any appointments during her pregnancy care and that she gave birth to her first child in the health center. Shukureto visited the mother to ask her directly why she chose a home birth. Her response was unexpected. After the birth of her first child at the healthcare center, the vehicle drivers ridiculed and belittled her because her outfit was spotted with stains. "I didn't want to go through the same experience," she told Shukureto. "But I can't afford to rent the vehicle also. I decided to give birth at home though I'm aware of its downsides."

It was a stunning revelation for Shukureto- the health workers had not thought that one unrelated action could hamper the success of their months-long work. This realization forced the woreda to assess if this one mother's story could be also applied to other mothers.

The Practice until this Point

While there is a government provided ambulance to serve patients in the area, the enormous demand for transportation often leaves new mothers to arrange for their own transportation, post-delivery. Women can either rent a *Bajaj (a* three-wheeled vehicle that transports three to five people at a time) for the day or take a public transport.

The daily rental price of a *Bajaj* is conservatively around 350 Birr- far too expensive for the mothers. Thus, the viable option for most women is public transport, but for many, it is an unpleasant experience of verbal mistreatment and a weary trek (passengers are dropped off far from their actual destination).

Disconcerting reports of mothers' experiences with transportation had appeared repeatedly, but informally. From the woreda review, the lack of transportation was concretely found to be one of the demotivating factors for women to come to the health center for delivery. With information to inform a solution, the health staff used the incident to mobilize for change.

The Solution

The Mugo Health Center, which leads one of the health clusters of the woreda, was among the first to act swiftly. In November 2018, Mugo Health Center organized

a town hall meeting. What initially intended to be an awareness-raising opportunity suddenly transformed into a full-fledged fundraiser, as participants astonishingly raised more than the targeted amount. On the spot, Mugo Health Center was able to raise enough funds to purchase a *Bajaj*, and with a small add up, a minibus. "When we got the bus, we will be able to address the problem transportation related to referrals to Hospitals," says Abdulfata Mohamed, head of the health center.

Part of the solution was also to convince *Bajaj* owners to support the initiative. The response of the Bajaj owners and drivers was very positive. About eight *Bajaj* owners enthusiastically joined the initiative in the Mugo Health Cluster and volunteered to transport a mother each month. In the process, they earned the honorary name, the Ambassadors of Mothers.

Hashim Shukurela leader of Ambassadors of Mothers at Mugo Health Center

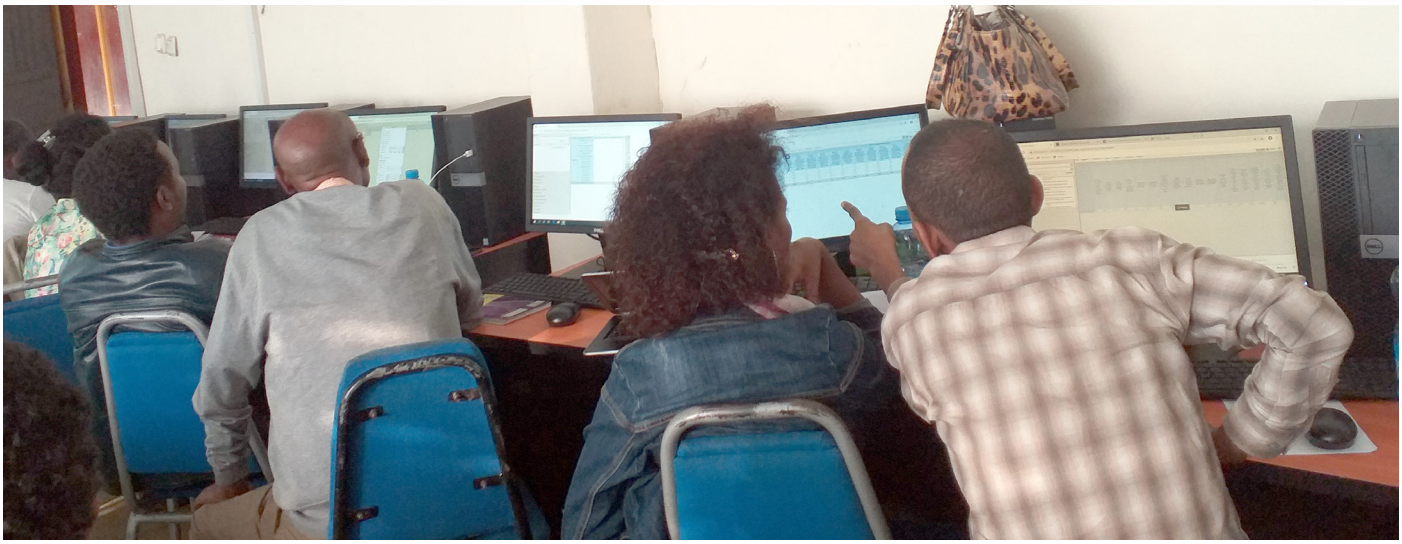
A little less than six months since its inception, the Ambassadors of Mothers have provided 496 transportation services in the Mugo Health Cluster alone, according to Abdulfata. Mulu Birhan who works with the health center in raising awareness says, "These *Bajajs* are our ambulances. They are always at our disposal regardless of when they are called on." Samira Wabarabi, Health Extension Worker at Mehal Mugo Health Post, one of the health posts under Mugo Health Center, notes the positive effects that the Ambassadors of Mothers have had. "The inflow of mothers giving birth at the health facility has increased since then. Our work is greatly benefiting from this initiative," says Samira, "We stopped worrying whether a mother will show up for the delivery or not." Hashim Shukurela, one of the Ambassadors at Mugo Health Cluster and the leader of his team, says he feels "great relief" even if it means his two kids occasionally sacrifice bread. He notes the resounding demand and intends to convince others to join the efforts. Abdulfata agrees with Hashim that more drivers/owners are needed. However, the health center needs to ensure that every driver is caring, respectful and compassionate when serving clients. "By joining the Ambassadors, drivers become part of us. What is expected of us is expected of them as well," says Abdulfata.

The Takeaway

Since its start, four *Bajaus* were purchased in the district, and many *Bajaj* owners joined the Ambassadors of Mothers. As a result, many more mothers are giving birth at healthcare units than before. The cumulative effect of this and other successes propelled the woreda to become one of the eight transformed woredas in Ethiopia.

From one unfortunate incident, the Woreda Health Office demonstrated that, if taken seriously and turned into a learning opportunity, an issue can become a springboard for effective, informed and innovative solutions that improve health outcomes and can be supported and fostered by the community.

Improving a Data Use Culture through Building Technical Capabilities and Optimizing DHIS2



The Amhara Regional Health Bureau (ARHB), in collaboration with the Ethiopia Data Use Partnership (DUP), documented learnings from a data use enhancement activity that sought to strengthen and increase the region's data use practices. During the information gathering process, contacted bureau staff remarked on the noticeable progress and increased confidence that had manifested from the intervention. According to Amtatachew Moges, Regional TB/HIV Technical Advisor, newfound capabilities in being able to review and use data through improved access to a District Health Information Software 2 (DHIS2) local server have made staff independent and self-reliant health professionals. However, this has not always been the case-- the journey to reach ARHB's current state required a systematic and multipronged approach.

Identifying and Navigating the Challenges

While ARHB deployed DHIS2, a routine health management information system that can generate, aggregate, visualize, and share health data, in early 2018, a general confusion surrounding it remained. Staff struggled to access and use the platform to its full capacity, which mainly stemmed from a lack of staff skills, technical difficulties with the various versions of the system, and limited access to the software. While ARHB staff grappled with DHIS2, the demand for data kept increasing. To satisfy this growing need, the regional health experts put in place an alternative program-level health data recording and reporting system that ran in parallel to DHIS2. Though it intended to provide a solution, the parallel system pushed DHIS2 use, and more importantly the bureau's data use practice, even further back.

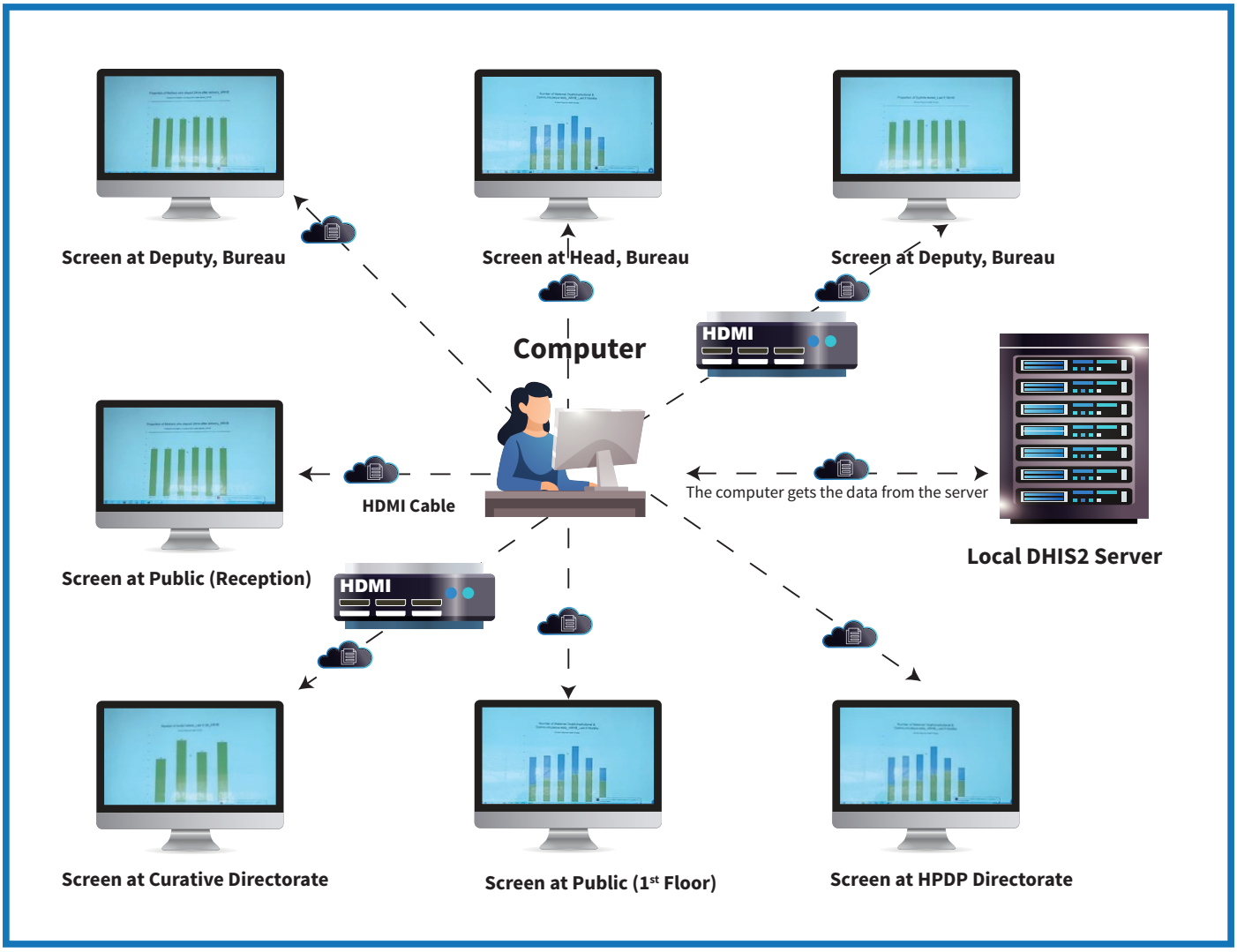
Noting the lingering challenges, ARHB, in collaboration with DUP, conducted an assessment to identify the specific problems around DHIS2 use and address the underlying causes. The joint team identified several root causes and classified them into three separate categories: program experts, technical issues, and infrastructure. Under the program experts area, the team uncovered the following challenges, inadequate staff knowledge and skills of DHIS2; an unreliable internet connection for the data exchange, which required the constant physical presence of experts that contributed to an overcrowded environment; and a lack of direct access to DHIS2 for staff. Under technical issues, the team discovered inconsistencies of performance-computing denominators, a need for an interactive platform to visualize key performance indicators (KPIs), and the existence of incorrectly configured indicators and data elements. Moreover, the team's problem identification assessment also uncovered the absence of a locally available and accessible server as a large infrastructure challenge.

Following the assessment, DUP, led by ARHB, spearheaded a discussion to identify and implement remedial activities to address the identified challenges and improve overall data quality and use. From the discussion, the team conceived of an intervention that aimed to develop the human and technical capabilities needed to access DHIS2 that would lead to better evidence generating and information use for informed decision-making in the region.

Supplying Solutions

To tackle the gap in staff skills, the team recommended providing capacity building training on data quality and use and the DHIS2 analytics modules. Accordingly, the first capacity building training was held on December 21–25, 2019 at Debre Markos University for 29 regional health program experts. This first training established a common understanding among the ARHB leadership and experts that DHIS2 is the only data source for all of their data use needs. The training also included hands-on computer training and mentoring to help build program experts' knowledge on using the DHIS2 analytic tools. As a way to further engage participants, the training also used real data that was relevant to participants and allowed them to test the different DHIS2 features that would mimic a real life scenario.

To address DHIS2 accessibility, the intervention team established a local DHIS2 server within ARHB so staff could utilize the platform more frequently and with ease. The team also installed and configured an offline DHIS2 version on a local machine using existing LAN infrastructure that was made accessible to all health program experts in ARHB. Each case team was provided a user account to further enhance user accessibility. The local DHIS2 server is monitored daily to ensure its functionality and that it receives updates, including WAR files, from the Ministry of Health.



Interactive display Design and some of Service Units Connected with HDMI

Another activity that ARHB implemented to increase staff DHIS2 access was setting up the infrastructure for an interactive display. The team procured and installed the needed equipment, such as TV sets, computers, USBs, HMID cables, and splinters, that connected ten different offices and spaces to the local DHIS2, giving them access to an interactive dashboard display. ARHB created a DHIS2 dashboard, called KPI for Interactive Display that visualizes data from indicators that represent each major program. A total of 270 visualizations allow staff to note and analyze trends in the data and the frequency of reporting. Through the enabled smart display, each connected office and space can access this dashboard and its analyses on their respective installed televisions. Valid configuration of the metadata, including indicators and data elements, is required for DHIS2 to function properly and to serve as reliable analytics platform. Previously ARHB experienced data inconsistencies for some indicators between the actual performance and the data in DHIS2 because of incorrect configuration, so end users, particularly program experts, were wary of the system. To avoid further compromises in data quality, an effort to update and reconfigure the metadata was given priority.

Creating Change in Data Use

Following the intervention activities, staff have noticed a marked change. Getachew Yaregal, Regional Immunization in Equity Technical Assistant, said he is now able to access DHIS2 to generate, analyze and use data. His coworkers' confidence and trust in the system has also seemingly grown, thanks to the training, as more program experts independently use DHIS2 as a source for routine reporting work. "Now I can see the general performance of a specific indicator myself and even if I want detailed information, I can access the local server and view the data with the dimension I want," said Amtatachew Moges, Regional TB/HIV Technical Advisor. Importantly, besides regularly utilizing DHIS2 for their own work, the health program experts have also started assisting workers at the Primary Health Center Unit (PHCU), sharing knowledge and feedback to the lower level.

As the health program experts and leaders acquired enhanced technical capabilities, HMIS personnel who were previously inundated with support requests from this group are now able to refocus and redirect their time on other priorities. The improvements made in infrastructure, including internet connectivity and interactive displays of the KPI dashboard in every location, have also played a large role in ensuring staff's ease of access to data and ability to visualize and share the data, which further bolsters trust and ownership in the platform.

For instance, that trust enabled the regional health bureau to conduct monthly data and performance review practices. Extracting and reviewing data from DHIS2 has become an institutional culture in the health sector of the region. Monthly performance review is conducted regularly and on selected key Indicators and the performance shows the regional trend, disaggregate by Zonal Health District (ZHD) and the regional status as compared to the national average. This practice proved to be the mostly important milestone towards efforts of improving data use for informed acts and plans.

DHIS2 has become ARHB's principal health information management system not only for data reporting, but also for using data for decision-making, and the parallel system that ran in conjunction with DHIS2 has been discontinued. From its experience, ARHB found that having an in-depth understanding of the challenges and available resources was critical to designing and implementing an effective intervention. Because the team engaged stakeholders, particularly program experts who are the end users, during each step of the process, they were able to refine activities as they implemented while also creating buy-in. These efforts coupled with supplementing staff training with mentoring and post-training follow up, enabled the intervention to target multiple levels of the bureau's initial problem and ultimately strengthened the region's culture of information use for decision-making.

A Pathway to Transforming Woreda Health Data Management Systems: Aleltu Woreda's Experience and Story

BACKGROUND

Aleltu is one of the woredas Oromia Regional Health Bureau (ORHB) selected for the integrated implementation of the four Health Sector Transformation Plan-I (HSTP-I) agendas: Woreda Transformation; Information Revolution (IR); Transformation in Equity and Quality of Health Care; and Producing a Caring, Respectful, and Compassionate Health Workforce. The HSTP midterm review revealed fragmented implementation of the transformation agendas as a major reason for suboptimal progresses. To help address the finding, the ministry of health (MOH) developed a new implementation model known as 'Four in One,'- a guidance on how to implement the four agendas in unison.

In 2019, instead of roundly deploying the model, the MOH decided to implement it first in eight woredas, or demonstration sites. The plan was to garner and scale-up good practices from these sites to the rest. The Ethiopia Data Use Partnership (DUP)/ JSI Training & Research Institute, Inc. (JSI) in collaboration with the MOH started supporting the demonstration woredas, which includes Aleltu, with the target of making the woredas IR models.

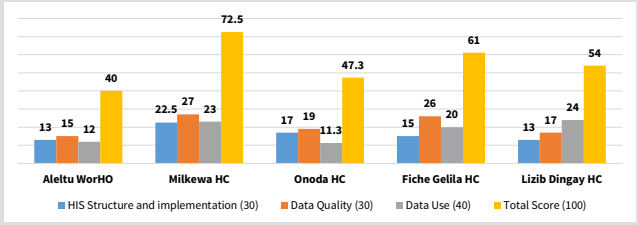
The IR aims to improve and sustain health system performance through the effective use of quality data for decision-making at all level of health system with key focus on the local level. For the realization of this objective, it employs the Connected Woreda Strategy (CWS), which the MOH developed to operationalize the IR. CWS is a tiered pathway for facilities and woredas to achieve the highest standards in data quality and use.

Health institutions are evaluated and scored against a common set of criteria related to infrastructure, data quality, and data use. Any health institution that scores less than 65% of the assessment criteria is categorized as an "Emerging Facility" while scores between 65% and 90% earn a category known as "Candidate Facility." In addition, a "Model Facility" is a class given to those who score greater than 90%, whereas "Connected Facility" are for model health facilities that are able to exchange data digitally online. Therefore, in order for a woreda to become a model, all health facilities that fall under it also need to be model and are able to send and access data through offline tools.

GETTING DOWN TO BUSINESS

Aleltu Woreda is located in the North Shoa Zone of the Oromia region and is one of the eight demonstration woredas. By closely supporting the woreda and health facilities under its catchment in implementing CWS, DUP sought to upgrade Aleltu to a Model Woreda. At start-up, DUP, jointly with the MOH and ORHB, conducted an IR baseline assessment. Findings from the assessment indicated that Aleltu with its four health centers and 20 health posts had been languishing at the bottom end of an emerging status with scores of 13 in Health Information System (HIS) infrastructure, 15 in data quality, and 12 in data use.

Baseline Score of Aleltu WorHO and Health Centers, October 2019



The baseline also identified a major factor behind the frustratingly low grades in IR status — a lack of adequate awareness on what the IR means and how it is supposed to be implemented. "We used to know it by name only. We were not sure what the Information Revolution really means and how it can be achieved," said Tamirat Jisa, Planning Unit Coordinator at the Aleltu Woreda Health Office. This trend similarly continued across the eight woredas. In order to remedy this issue and attain the targets, the baseline document recommended capacity building training as a starting point.

Accordingly, DUP, in collaboration with the MOH, conducted a capacity building training from December 25–27, 2019 in Addis Ababa. The training brought together about 24 health workers from the eight woredas and focused on introducing the IR initiatives, how to ensure data quality platforms and a data use culture in the woreda health systems. The training, in addition to raising participants' awareness on health information management systems, such as DHIS2, and how to monitor

performance of the health institutions, also helped them identify causes that led to low performance.

EXTRACTING ROOT CAUSE AND DISCOVERING SOLUTIONS

A major underlying root cause of low performance was malfunctioning Performance Monitoring Teams (PMTs) as a result of uncommitted and mostly unavailable leaders. Weak follow-up and monitoring of the action plans were also identified as another cause. On top of all this, the PMT members' skills and knowledge gap deterred any progress in performance monitoring and supervision.

Another interesting insight that the training forum unearthed and brought to light was the use of incentives, such as promotions, which were given to those who reported false accomplishments and/or affiliated to the top echelon of the leadership. Unfortunately, this practice led to discouragement among health workers and embedded the culture of unaccountability and falsification in health data recording and reporting.

As alluded to in the previous section, the capacity building training was also used to identify and develop tailored intervention plans. Strengthening PMTs through training members, introducing regular data reviews at the departmental levels, strengthening HIS with supplies like shelves and computers, establishing performance-related recognition mechanisms, and experience sharing among departments were identified as major intervention areas.

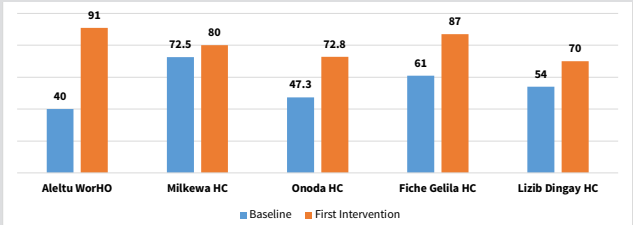
Ensuring accountability on health data recording and reporting by creating data ownership was recommended as another main action item. The capacity building training was concluded with tailored action plans that were woreda specific. To help ensure implementation of the action plans, DUP cluster leads, regional focal person, and woreda focal person arranged for monthly communication and follow-up.

DUP supported the implementation of these tailored intervention plans by providing capacity building training on data quality, data use, and DHIS2 analytics for 40 staff. It also conducted regular mentoring and supportive supervision to woreda health offices and health facilities in collaboration with ORHB. To address HIS structure-related gaps, IT equipment such as a multipurpose photocopy machine, two computers, and five shelves was procured and supplied. Furthermore, the woreda health office was given direct financial support to enable them conduct supportive supervision to health centers and health posts.

THE RESULT

The Aleltu Woreda Health Office started implementation of the tailored plans in January 2020. After the first six months of interventions, the woreda health office ascended to Model Woreda status in IR by increasing 51 points from its baseline score. All of the four health centers in the woreda progressed from emerging to candidate facilities. PMTs at the woreda level and health facilities are meeting regularly on a monthly bases to review their data quality and performance and if needed, to develop actions for any identified gaps, based on root cause analysis.

Progress of IR Score at WorHO and four Health Centers, June 2020



The woreda health office has shown better improvement in all three domains, compared to the health centers. It started leading the initiative implementation which have positive effect in ensuring sustainability of what we have started together. In the Ethiopian Fiscal Year (EFY) 2012, they have conducted three HIS supportive supervision to health centers and health posts under their administration and also conducted data verification to selected indicators on a quarterly bases.

The last six months of progress that Aleltu has made is astounding. The springboard for this headway is believed to be the proper introduction to the IR, what it entails, and its methodologies of implementation. This experience brought forward a big takeaway that ensuring appropriate awareness among the health program implementers should be given top priority. A misstep in this simple starting point could have the potential to profoundly derail a project.

Leveraging Popular Social Media in the Information Revolution:
Digitalizing the Health Information System and Improving Data Use in Ethiopia

Ethiopia has embarked on an ambitious Information Revolution initiative to transform its health services through two pillars of change: digitalization (*developing and deploying digital health tools*) and data use (*creating a culture and practice of using data*). In addition to installing a health information management system, the country is also innovating and employing digital health tools that will be the first step towards ensuring the availability and accessibility of quality health data. With more quality data available, a standard and regular practice of data use among the health workforce will complete the full circle of transforming the country's delivery of health services.

Within this effort, communication among the different actors in the health systems plays a crucial role. Stakeholders need a conduit through which an exchange of critical information can happen, a place where they can discuss the implementation of the digital tools and health workers' performance on data. However, in Ethiopia's Southern Nations, Nationalities, and Peoples' (SNNP) region, communication has been hindered due to limited resources and the large geographical size.

A Communication Gap

The SNNP's communication gap contributed to a host of data quality and use issues in the region, including a scenario where there were instance of monthly and quarterly reporting rates and timeliness of reports from District Health Information Software 2 (DHIS2) – one of Ethiopia's national health data management digital tools – was not at a required level. Accordingly, there was a need to follow up and remind woredas and health facilities to send reports on time and to establish easy ways of providing feedback on the quality of the data being submitted.

In addition, the registration of households and family members in the Electronic Community Health Information System (eCHIS), another digital system intended to manage the health information of communities in agrarian settings, was lower than expected at the beginning of the rollout. The absence of a regular feedback mechanism has been a major source of the disparities and discrepancies in the regional health systems' performance in relation to household registration by health extension workers.

There was no streamlined communication mechanism for Health Information Technicians at woreda and health facility levels to report technical challenges and whenever they need to escalate the support request. This results in a number of unreported and/or unattended technical issues at lower level in the health system.

A Social Media Solution

To improve this communication feedback loop, the SNNP Regional Health Bureau (RHB) discussed with the Ethiopia Data Use Partnership (DUP) on potential alternative and innovative solutions to help mitigate the gap and create a feedback exchange mechanism. One idea was to leverage social media channels into a regional health information communication platform.

For many in Ethiopia, social media have leapfrogged the traditional mainstream media to become the primary source of information and news. Among social media applications, Telegram Messenger, an accessible, cloud-based instant messaging service, is the most widely used platform in Ethiopia. It also offers easy accessibility to updates, even in areas where internet connection is low or intermittent, making the platform preferable to other forms of traditional communication including emails and phones. In light of this fact, Telegram appeared to be the best alternative option and the SNNP RHB and DUP decided to try it as the main information sharing forum where updates, inquiries, and feedback could be regularly sent across the regional health systems.

On April 10, 2019, the health bureau created a regional Information Revolution (IR) telegram group, called SNNP IR. Individuals from the Ministry of Health (MOH), RHB, zonal health departments, woreda health office, health facilities, and partners were invited to join the group. To-date, about 279 people have signed up for the group channel, and members vary from developers of digital health tools to grassroots-level implementers.

Linking Stakeholders and Affecting Change

Virtually, Telegram brought together department heads, health experts, and workers at the MOH, RHBs, partners, and other levels of health system. It enabled implementers to directly and freely exchange feedback with the designers and developers of the digital tools without any bureaucratic or other communication barriers that typically affect effective information exchange. This direct access between stakeholders allowed developers to quickly learn and address any unforeseen issues in the tools. Further, the instant and accurate feedback from MOH and RHB experts enhanced implementation capacities at the lower tiers of the health systems.

HC + HSP Quarterly SD report completeness status in % August 2, 2019					
Zone/ Sp woreda	# HF expected to report	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Gurage	76	100	98.6	98.6	100
Bench Sheko	27	100	100	100	100
Hawassa City Administration	19	100	100	100	84.2
Konta	4	100	100	100	75
Sitte	38	100	100	97.3	97.3
Yem	6	100	100	100	100
Halaba	11	90.9	90.9	90.9	100
Kembata Tembaro	34	100	100	100	100
Gamo	58	100	100	100	100
Wolayita	75	100	100	100	98.6
Sheka	14	100	100	100	92.8
West Omo	13	100	100	92.3	92.8
Sidama	138	99.2	97.8	93.4	91.3
Hadiya	65	98.4	98.4	98.4	100
Goffa	25	96	96	72	60
Dawro	24	95.8	79	83.3	100
Segen	23	95.6	91.3	91.3	95.6
Kaffa	47	93.6	95	100	97.8
Konso	13	92.3	92.3	84.6	92.3
Gedeo	39	91.4	97.4	94.8	92.3
South Omo	42	85.7	80.9	92.8	83.3

Example of Telegram Information Exchange

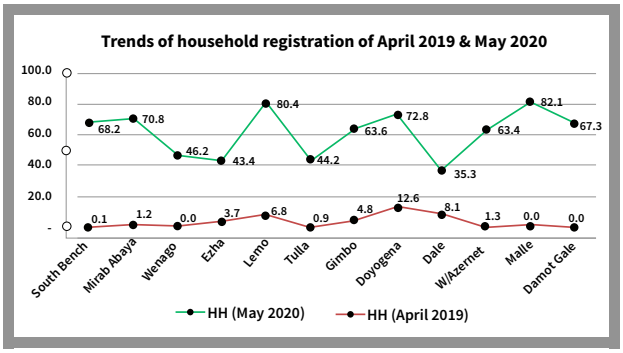
As an effect, open communication galvanized the deployment and expansion of digital health tools, such as DHIS2 and eCHIS, across the region. The platform's primary architect, Epheson Timotewos, DUP's IT Technical Specialist at the SNNP RHB, says, "Data quality has shown a dramatic surge," since the introduction of Telegram. Group exchanges related to data quality are 22.4% of messages and among the top topics of the total 298 information exchanges conducted via the channel.

A year later, data completeness has improved to 98.4% in the region, partly thanks to the communication platform. Over the same period, eCHIS household registrations increased from 3.5% to 59.3% while household member registrations grew from 3% to 54.3%, making the region one of the best performers in eCHIS implementation in the country.

Besides enabling swift lines of communication, the SNNP IR group also created horizontal learning among peers. Health administrative units and facilities can share and learn from each other's experiences near real-time. Further, the virtual group also provides accountability. The RHB evaluates and grades the data quality reports and shares them on the platform where all members can access, generating a friendly competitive climate among the users that works as intended. Those with low grades usually show up with an improved performance by the following report.

Over the past 18 months, the SNNP IR telegram platform which started at, and by, the regional Policy, Planning, Monitoring and Evaluation Directorate (PPMED) and Health Information Technology Directorate (HITD) has grown expontially. It now assumed the prime role in the dissemination of health information system (HIS) implementation performance; sharing lessons learned from root cause identification and analysis of implementation gaps; and providing intervention recommendations. More importantly, it became the default communication outlet of the SNNP RHB. For instance, during the COVID-19 pandemic about 10% of the information shared on the platform is related to the virus and during travel restrictions, the IR Telegram group has been the single most helpful means of communication.

Currently, the creators of the SNNP IR platform – PPMED and HITD – play active role in monitoring and evaluating the information exchanges. In fact, Telegram is a sort of open platform where group members have much greater rights and privileges to add new members, share information and feedback, etc. That effectively bars a strict admin and management role which usual pertains to certain team or individual in other social media platforms. Yet, a team who plays the role of directing inquires, updates and feedback to a responsible team or individual is needed. Noting this need, discussions and efforts to expand this role to other directorates and units are underway.



Exchange Updates on eCHIS Household registration

In summation, SNNP IR telegram group has a wider reach. It connects stakeholders in MOH, RHB, Zonal Health Department (ZHDs), Woreda Health Offices (WoHOs) and health facilities. It is also a platform where ZHDs communicate with their subsidiaries and vice versa. However, some Zonal Health Desks who opted to have separate and dedicated platform have already created their own telegram group. The number of zones who wanted to sue this experience and model is also growing.

SNNP's Lesson

While SNNP RHB initially faced difficulties implementing the country-wide efforts to transform health service delivery, the region has since greatly improved its data quality and use among health care workers. By identifying the core challenge and developing a custom solution through the use of a popular social media platform, the region now has a robust health feedback and learning platform to improve data quality and use even further. The lesson from SNNP also demonstrates that future challenges in Ethiopia's Information Revolution transformation efforts can also be solved through local innovation.

Data-Powered Decisions: How an Ethiopian Health Center Improved Antenatal Care

Tsadekan listening to the counseling of the Midwife

In Tigray, Ethiopia, Tsadekan Dimtsu, who is seven months pregnant with her fifth child, is at the Hawelti Health Center for what should be her third antenatal care (ANC) visit after skipping her second appointment. "I didn't know that I needed to come back. I thought I only come back [to the health center] if I felt unwell," says Tsadekan. She was not alone in her assumption. In fact, mothers missing ANC visits was recently a top problem for the Hawelti Health Center.

Finding the Problem

The health center established a quality improvement team (QIT) to prioritize problems, analyze their root causes, and develop and implement interventions to overcome them through regular performance monitoring meetings. Prioritization involves a process of ranking problems by their severity, based on a grading system that is approved by the Ethiopian Ministry of Health. Problems with the highest marks are given top priority. During a January 2019 performance monitoring meeting, the QIT identified multiple underperforming programs. According to the prioritization matrix, low turnout for the fourth ANC visit (ANC4), which is supposed to occur between the 37th and 40th weeks of pregnancy, was an urgent problem. The QIT conducted a root cause analysis to determine the underlying reasons and mapped the causes under categories such as leadership, community, health facility, geography, data, and family.

The QIT prioritized the root causes that could have the greatest impact. Among the causal factors were an inadequately functioning pregnant women cohort system, low health extension worker (HEW) engagement, low midwife participation, lack of partner involvement, and poor intra-facility referral linkage.

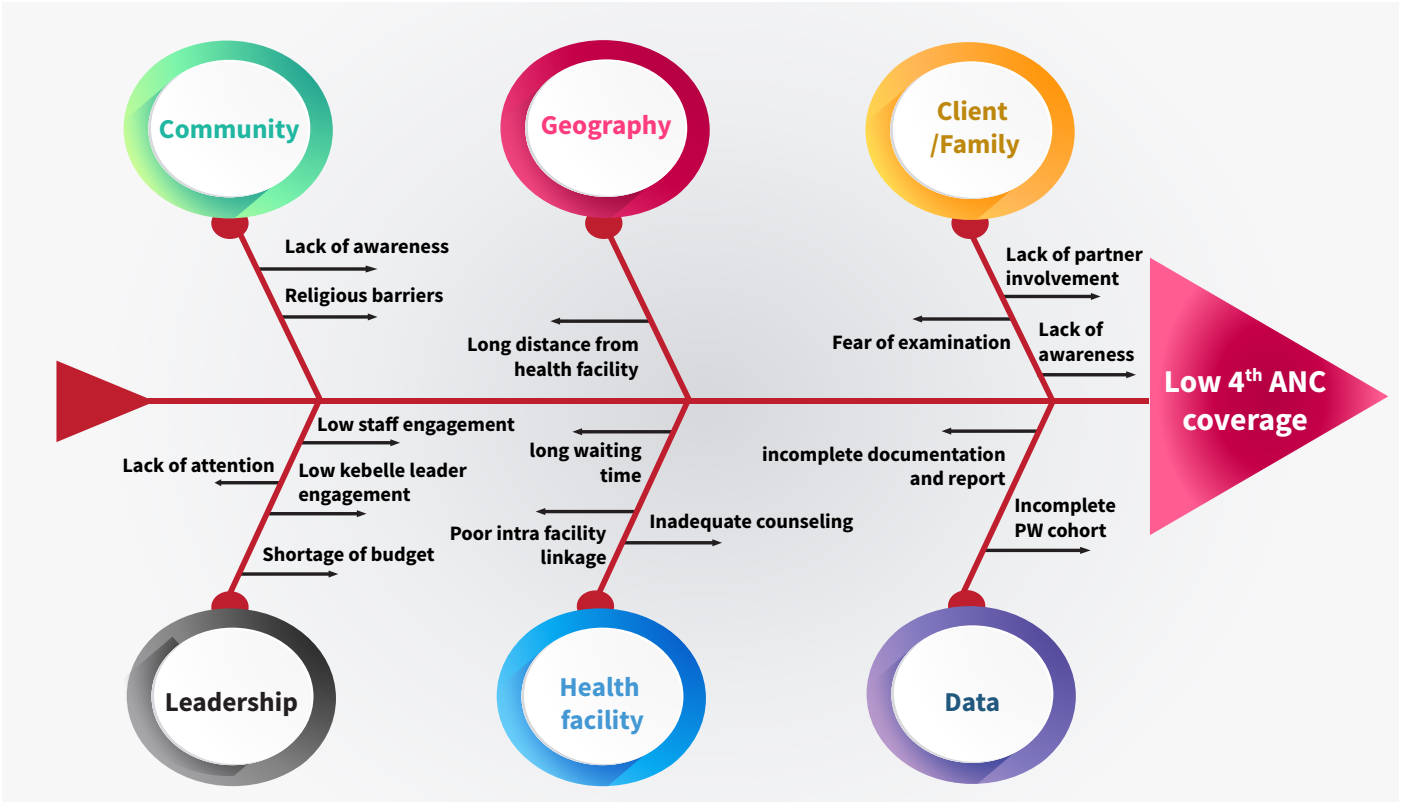
Implementing Solutions

Next, the QIT made a list of practical solutions and started implementing them. With the help of midwives, they created a list of defaulters (pregnant women who missed ANC appointments) from the pregnant women registry. Each Friday, an HEW supervisor gave a list of defaulters and their relevant information to HEWs. Over the weekend, the HEWs, in collaboration with the head of the women's development army, found and talked to the women and made ANC appointments for them at the health center for the following week. The second promising intervention was strengthening intra-facility referral linkages. The QIT found that many women who tested positive for pregnancy after visiting the health center's outpatient department were not referred to the maternal and child health (MCH) department: in the first three months of 2019, 98 of 143 women who visited the health center for pregnancy tests were confirmed pregnant. But only 60 of them started ANC services.

"This was a shocking revelation. We are supposed to have them continue attending the service," says Daniel Meressa, director of the health center, who was dismayed at the finding. To remedy the issue, the health center instructed staff who conduct pregnancy tests to automatically link women who test positive to the MCH department for antenatal care. A few months following the decision, the health center's QIT reviewed the data from the interventions. ANC4 completion was at 52 percent when the intervention started. By June 2019, the completion rate jumped to 60 percent.

"This result was not enough. But it indicates what we can do if we put our act together," says Daniel. While the increase in completion rate was modest, it was enough to boost the health center staff's morale. In July 2019, the second phase of the intervention began, aiming to increase ANC4 visits to 85 percent before the end of June 2020. In addition to strengthening the aforementioned interventions, the QIT recommended focusing on ways to identify pregnant women earlier by enhancing home visits, conducting family conversations, holding campaigns, and streamlining ANC services in the routine work of the kebele administrators.

Root Cause Analysis of Low ANC-4 Visit



Accordingly, kebele administration mobilized communities to pave roads to health facilities. HEWs conducted several home-to-home visits and talked with 49 families. It was one such family conversation that led Tsadekan back to receive ANC services after she missed her second appointment. "I lost my third child three days after he was born. I didn't attend ANC during his pregnancy. Now, I began to think if his death was related to any of this," she confides.

Long distances to the health center in addition to long wait times contributed to the low turnout for ANC4 service, as did the fact that Hawelti serves a large population and is only supported by two health posts. The QIT expanded ANC services at the health posts, which are closer to many women's homes, sending midwives to the health posts with the necessary equipment to provide ANC services to 10–15 women a day.

Further, the health center extended tracing to all ANC visits, not just ANC4. HEWs, in close collaboration with head of women's development army and the kebele administrator, make sure that pregnant women are linked from one ANC visit to the next. "Although this is bit too much with limited human resources and number of facilities, we needed to do this. We could not find another easy way of coming out of this," says Daniel.

> "This result was not enough. But it indicates what we can do if we put our act together"
>
> *Daniel Meressa, Director, Hawelti Health Center*

Improving Health Outcomes

By the end of November 2019, the percentage of women who completed ANC4 visits had grown from 60 percent in June 2019 to 79 percent. More importantly, 86 percent of the women who test positive for pregnancy at the health center are linked to and start attending ANC services, a substantial increase from before the health center implemented these changes.

Ultimately, these efforts are helping more women give birth at the health facility, where they are attended by skilled professionals; such deliveries rose from 67 percent in June to 88.5 percent in November. The Hawelti Health Center still has progress to make, but thanks to the diligence of its QIT and staff, ANC visits and skilled deliveries are on the rise, proving that having a clear process to routinely review and use data to inform decision-making can improve maternal and child health care service use and in turn, health outcomes.

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