DIGITAL HEALTH ACTIVITY

ANNUAL REPORT

Submitted to: USAID/Ethiopia
Prepared by: John Snow, Inc. (JSI)

ACTIVITY YEAR I
DIGITAL HEALTH ACTIVITY

Annual Report
Activity Year I (October 11, 2019 – Sep 30, 2020)
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Submitted to:
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Prepared by:
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Cover photo:
A pharmacist working as a Store Manager at Tikur Anbessa Specialized Hospital, filling orders from dispensing units using Dagu 2.0 digital system.
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## ACRONYMS

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<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>AY</td>
<td>Activity year</td>
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<tr>
<td>ASN</td>
<td>Advance Shipment Notice</td>
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<td>CBMP</td>
<td>Capacity Building and Mentorship Program</td>
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<td>COE</td>
<td>Center of Excellence</td>
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<td>DHIS2</td>
<td>District Health Information System 2</td>
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<td>DHA</td>
<td>Digital Health Activity</td>
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<td>DUP</td>
<td>Data Use Partnership</td>
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<td>eCHIS</td>
<td>electronic Community Health Information System</td>
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<td>eHA</td>
<td>Electronic Health Architecture</td>
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<td>eHIS</td>
<td>Electronic Health Information System</td>
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<td>EFDA</td>
<td>Ethiopian Food and Drug Authority</td>
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<td>EMR</td>
<td>Electronic Medical Record</td>
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<td>EPHI</td>
<td>Ethiopian Public Health Institute</td>
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<td>EPSA</td>
<td>Ethiopian Pharmaceutical Supply Agency</td>
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<td>eRIS</td>
<td>electronic Regulatory Information System</td>
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<td>F&amp;O</td>
<td>Finance and Operations</td>
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<td>GHSC PSM</td>
<td>Global Health Supply Chain - Procurement Supply Management</td>
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<td>GOE</td>
<td>Government of Ethiopia</td>
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<tr>
<td>GVAN</td>
<td>Global Value Added Network</td>
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<td>GS1</td>
<td>Global Standard One</td>
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<td>GTIN</td>
<td>Global Trade Item Number</td>
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<td>HEW</td>
<td>Health Extension Worker</td>
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<td>Health Information System</td>
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<td>Health Information Technician</td>
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<td>Health Information Technology Directorate</td>
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<td>HMIS</td>
<td>Health Management Information System</td>
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<td>HR</td>
<td>Human Resources</td>
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<td>HRIS</td>
<td>Human Resources Information System</td>
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HSC  Health Sciences College
ICT  Information and Communication Technology
KPI  Key Performance Indicator
IR   Information Revolution
IRR  Information Revolution Roadmap
IT   Information Technology
IVR  Interactive Voice Response
JSI  John Snow, Inc.
LMIS Logistics Management Information System
LLIN Long-lasting Insecticidal Net
MDR-TB Multidrug-Resistant Tuberculosis
MFR  Master Facility Registry
MOH  Ministry of Health
NHDD National Health Data Dictionary
NPC  National Product Catalog
OJT  On-the-job training
OS   Occupational Standard
POE  port of entry
PPMED Policy, Planning, Monitoring, and Evaluation Directorate
RHB  Regional Health Bureau
RRF  Reporting and Requesting Form
SOP  Standard Operating Procedure
SNNP Southern Nations, Nationalities, and Peoples
TVET Technical and Vocational Education and Training
TWG  Technical Working Group
USAID United States Agency for International Development
WHO  World Health Organization
The Digital Health Activity (DHA) is funded by the United States Agency for International Development (USAID). The five-year Activity supports the Government of Ethiopia (GOE) to implement the country’s Information Revolution Roadmap (IRR), one of the four transformational agendas of the national Health Sector Transformation Plan. The DHA is helping to build a sustainable, resilient, and interoperable health information system (HIS) that ensures the entire health sector has the data, analytics, and skills to improve the health and well-being of all Ethiopians.

The DHA team supports the GOE and USAID’s commitment to the Data Use Partnership (DUP) as the framework and implementation approach that will result in a robust electronic HIS (eHIS). DHA is working with the GOE and other donors to develop a suite of eHIS that the Ministry of Health (MOH), Ethiopian Pharmaceutical Supply Agency, Ethiopian Food and Drug Authority, and designated partners will maintain and manage by the end of the DHA. The DHA objectives are:

### 1. Digitization

The DHA team will support national HIS needs holistically, leading in software development efforts, as well as providing deployment, training, supportive supervision, field support, and troubleshooting across all priority subsystems using a pool of trainers, networking experts, and field-level implementation support teams. A helpdesk call center staffed by all partners will triage problems for all subsystems until that function can be transferred to the MOH Innovation Lab.

### 2. Data Use

The DHA team will continue to develop and strengthen local ownership and development of data use and visualization capacity and work in collaboration with the DUP project to support regional health bureaus, zonal health departments, woreda health offices, and primary health care unit leaders to strengthen capacity to analyze, digest, and use high-quality data for flexible and adaptive leadership.
3. Governance

The DHA team will leverage strategies for government-driven support to build HIS capacity and ownership at all levels, targeting the most critical barriers to developing and scaling health information subsystems. Strong governance is the foundation for the first two objectives.


The DHA team will support the Ministry of Health and Ethiopian Public Health Institute to develop and implement a COVID-19 surveillance and tracking system across the country. The Digital Health Activity (DHA) planned to provide technical assistance for customization and implementation of the system, information on best practices, develop and configure tools to expedite the dissemination of the lab results, and assist in the tracking of performance in achieving the surveillance capabilities. DHA has also planned to support the MOH and EPHI to analyze data on surveillance performance, identifying gaps in surveillance and recommending options for taking effective steps to support regions in addressing the gaps.
EXECUTIVE SUMMARY

The Digital Health Activity (DHA) is a five-year, USAID funded Activity that has been implemented since October 11, 2020 in support of Ethiopia’s information revolution roadmap (IRR). With the goal of increasing the magnitude and diversity of quality health information for better decision making, DHA has been supporting the Ministry of Health (MOH) and its agencies to have the data, the analytics and the necessary skills to build a sustainable, resilient and interoperable health information system (HIS) in Ethiopia. DHA’s objectives support digitization and data use, the two pillars of the IRR, and HIS governance, the foundation of the two pillars. Additional objective during this Activity reporting year has been supporting the national response to the COVID-19 pandemic.

This annual Activity report covers the period from October 11, 2019 to September 30, 2020. During this period, DHA has made milestone achievements in digitization, data use and HIS governance against a headwind of the global COVID-19 pandemic and political instability. These required the team to be adaptable and rise to the occasion to leverage our digital skill assets to achieve results.

Digitization: In the Activity Year (AY) 1, marked improvements were made across the different subsystems (eCHIS, EMR, DHIS2, HRIS, Dagu, mBrana, etc.). DHA supported the MOH to expand the range of eCHIS modules: child health and nutrition modules were completed during the year, while TB and malaria modules are developed and will be field tested in AY2. The electronic community health information system (eCHIS) was deployed in 11 woredas across six regions and over 960 health extension workers were trained to use it. Compared to the plan, the monthly average number of eCHIS dashboard users exceeded 100%. Led by Her Excellency the Minister of Health Dr. Lia Kebede, a national technical working group was set up to coordinate and lead eCHIS development and implementation in the country.

Through active end-user participation, the Activity gathered system requirements for the Electronic Medical Record (EMR) system. The EMR was piloted at Tirunesh Beijing Hospital. Open source EMR software was selected to meet the requirements. The software development commenced and a total of 46 administrative and over 200 health care professionals were trained on how to use the EMR system.

During AY1, over 3000 health facilities, woreda health offices and regional health bureaus received supportive supervision, enabling more than 1100 health professionals to receive on-the-job training (OJT) on DHIS2. Subsequent analysis of HMIS data showed improvements in report completeness and timeliness. As part of the improvement of DHIS2, DHA also developed and piloted a web-based multi-drug resistant-tuberculosis (MDR-TB) tracking tool.

The Activity, in partnership with MOH, designed and customized a new human resource information system (HRIS). Based on feedback from intensive requirement gathering, an open source, standards-based integrated human resource information system (iHRIS) was used to develop the system. With the new HRIS, MOH can track, maintain and keep up to date information on the health workforce in Ethiopia.
To ensure stable operations at all levels of the Ethiopian Pharmaceutical Supply Agency (EPSA), DHA added new features in different modules of Vitas that helped ease and speed up put-away, restock, distribution, financial and fleet management. The Activity provided refresher training on Vitas to 105 EPSA staff. Additional 42 EPSA IT staff were trained to build in-house capacity to self-sustain in the future. DHA also installed an issue-tracking tool called JIRA. Since February 2020, 181 issues were reported from all EPSA sites and 180 (99%) of them were resolved with EPSA’s internal capacity. Through its help desk, DHA received 455 issues, which were beyond EPSA’s capacity and resolved 413 (91%) of them. DHA also helped EPSA develop an online report and requisition form (RRF) during the year. This enabled health facilities to process their orders remotely through a website without any paperwork, reducing time and other resource use.

Dagu 2.0 software, an independent and custom software solution designed to work at hospitals and health centers for supply chain management and inventory control, was upgraded in 126 health facilities. Dagu 2.0 provides aggregate inventory reports for facility heads and other senior leaders for decision-making. With Dagu 2.0, health facilities are now capable of generating report and requisition forms (RRF) electronically. DHA provided support to a total of 533 Dagu health facilities during the year, resolving different issues onsite. A total of 130 health information technicians received an OJT and 396 Dagu issues were reported, out of which 76% were resolved in the year.

In this Activity reporting year, DHA provided support to EFDA in the management and development of electronic regulatory information systems (eRIS). New features have been added to i-Register, i-Import and i-License. The new features on i-Register, an application that allows importers to apply for market authorization and certification, helps clients access important information about their application process. Similarly, new features on i-Import, an online application that allows importers to apply for and receive permits to import medicines and medical devices, allow EFDA and clients to access most products types in the same place. The added features on i-License also serve various purposes. In addition, a new mobile application called i-Verify was designed during AY1. i-Verify, designed to track and trace health commodities from manufacturer to point of issue, can be used at any point in the supply chain to verify the authenticity of a product. The application helps fight illegally imported commodities. The product will be launched in the first quarter of the second year of the Activity. Of the 7000 issues reported on eRIS, close to 95% of them were resolved. During the year, a total of 10,334 new users got access to eRIS while a total of 38,000 logins were reported. Refresher trainings were also given to 114 participants drawn from the five EFDA branch offices.

As part of tracking and tracing health products, DHA supported the implementation of a National Product Catalog (NPC) that helped Ethiopia start using a global standard for product registry and identification, learning from the
experiences of other countries. After customization and development of the NPC, a mobile NPC is in development. The mobile NPC is portable and once finished will help scan barcodes and help identify if a product is available in the NPC and guarantee the authenticity of a product.

During AY1, DHA collected products with global Transaction Identification Number (GTIN) from warehouses across the country. A total of 340 products with GTIN were found and 144 unique GTIN products were identified.

Based on assessment of health facilities, dysfunctional HealthNet Systems were fixed at the federal level. Through subcontracting of local youth groups, DHA will support the smooth functioning of HealthNet at the facility level in the second year of the Activity. DHA has also been supporting efforts of MOH to realize the Ethiopian eHealth Architecture. As part of this initiative, DHA played a key role in developing the Master Facility Registry and National Health Data Dictionary.

**Data Use:** During the first implementation year, DHA conducted a desk review on data use strategies. Based on the findings, the Activity identified critical steps to improve the rollout of data use at different levels of the health system. Furthermore, the DHA worked within the national TWG in analyzing historical data. It has been producing information on the impact of COVID-19 on program service coverage and uptake using indicators across maternal and child health, communicable diseases, COVID-19, connected woreda and supply chain. Dashboards were prepared to display the results in ways that are easy to interpret. The Activity also organized a national workshop on the national status of essential services before and after COVID-19. Generally, performance of woredas varied. Lessons from high-performing woredas will be shared with low performing woredas. Low performance was mainly attributed to the impact of the COVID-19 pandemic.

During the reporting year, DHA supported 20 woredas along the maturity pathway. Baseline assessment was conducted in 17 of the 20 connected woredas. Eight woredas scored 65% and above becoming candidate woredas while the remaining woredas were emerging ones. Gap filling support has been given to the woredas to push them along the maturity pathway. DHA also identified eight IR model hospitals and conducted a baseline survey. High TB load hospitals were selected for the IR hospitals.

**Capacity Building:** In an effort to build the capacity of last mile health workers, DHA has been collaborating with regional health science colleges (HSCs) in the training of HITs, pharmacy technicians and HEWs. Accordingly, occupational standards (OS) were completed for HITs and approved by MOH and the federal TVET. During the year, DHA, in collaboration with MOH, DUP and HSCs, identified blended learning approaches for DHIS2 and Dagu 2.0 modules. In addition, as part of the capacity building and mentorship program, DHA identified Mekelle and Jimma Universities to serve as centers of excellence for EMR and eCHIS, respectively. Grant awards will be given to the universities in the second year of the Activity.

**HIS governance:** DHA has been supporting MOH and its Agencies to develop different guidelines and policies. Accordingly, DHA draft-
ed a Health Data Access and Sharing Policy to establish procedures for accessing health related data; an IT Infrastructure Management Guideline to ensure proper use of IT infrastructure and equipment; and a National Information Act to set out the minimum national standard on the rights and interests of health service user and the health systems.

**COVID-19**: In response to the COVID-19 pandemic, DHA, in collaboration with the Bill & Melinda Gates Foundation’s Data Use Partnership (DUP), supported the development and implementation of multiple critical digital health tools to mitigate the effects of the pandemic. DHA and DUP worked on: a surveillance and tracking system; a system to monitor and control hand sanitizer quality; expediting registration, licensing and import of COVID-19 related supplies; a data visualization dashboard; and training of health workers on operation management of COVID-19 data systems.

**Strategic Information**: In this Activity year, DHA prepared a Learning, Monitoring and Evaluation (LME) plan that was submitted to and approved by USAID. The LME plan is guiding the Strategic Information (SI) activities within DHA. Different data collection tools were developed and shared with DHA staff. Data verification was conducted and feedback was communicated to the sites for improvement. The Activity regularly conducted data analysis, and compiled and submitted reports to USAID. Based on the key lessons learned during the first Activity year, DHA will refine its plan for AY2.

**Human Resource and Operation**: The COVID-19 pandemic and the unstable security environment that existed during AY1 heavily challenged the Activity. During the year, 181 staff were on-boarded including the replacement of the Chief of Party. Visual compliance was checked every time a new staff was hired. During the year, a local hire employment manual and a work from home policy were developed. With regard to the budget, $7,056,109 was spent out of the $21,660,004 obligated budget with $245,000 allocated for grants.
INTRODUCTION

The Ministry of Health (MOH) has invested significantly in the health information system (HIS) development under the Health Sector Transformation Plan; specifically the Information Revolution Roadmap (IRR). The goal of this investment is to increase the magnitude and diversity of information available in all aspects of the health sector; ensure trustworthiness of the information, and improve the quality of life for all Ethiopians through better decision making.

The objectives of the IRR are to:

- Enhance access and visibility of health information for patients and the wider public.
- Establish an interoperable system architecture to strengthen integration, standardization, and harmonization among priority data sources.
- Create a culture of data use that leads to evidence-based decision and action at all levels of the health system.
- Significantly improve the methods and the practices of analysis and use of health information and,
- Optimize data quality at all levels.

The DHA (also referred to as ‘the Activity’) objectives support the two pillars of the IRR: the digitalization and scale-up of HIS, and a cultural transformation in data use. The first pillar focuses on improving access to and availability of high-quality and transparent health data. The second focuses on the importance of cultivating commitment to and capacity for evidence-based decision-making at all levels of the system. At the same time, the Activity objectives support the development of sustainable HIS governance as the foundation of these two pillars. This foundation focuses on the legal and policy framework, as well as the coordination and alignment of actors and investments to support HIS integrity, functions, and performance.
1. ACTIVITY IMPLEMENTATION

Objective 1: Support information technology systems and data repository

Sub-objective 1.1: Support development, operation, and maintenance of various existing health information systems

1.1.1 eCHIS: Collaborative iteration by DHA and the MOH Innovation Lab for a high-quality product and implementation

In the first activity year (AY), DHA supported MOH effort to expand the range of electronic community health information system (eCHIS) modules. DHA supported the completion of Release-2 modules (child health and nutrition) and the development of a newly planned Release-3, which comprises TB and malaria modules.

The development of Release-3 started with scoping for TB and malaria programs in selected sites of Amhara and Tigray Regions. The scoping result was compiled and sent to the Disease Prevention and Control directorate, Policy, Planning, Monitoring, and Evaluation directorate (PPMED), and Health Information Technology directorate (HITD). Focal persons were assigned from Disease Prevention and Control directorate to work with the eCHIS technical working group (TWG) on the prototype application for malaria and TB. DHA also supported the development of workflows based on the scoping results and guidelines for the TB and malaria programs in eCHIS. The malaria elimination agenda was also included. DHA led the application development work. The newly developed TB and malaria modules were piloted in Lemo Woreda, SNNP Region and inputs from this pilot will inform the development iteration.

In addition, the Activity prepared an infrastructure plan to meet the eCHIS scale-up plans of the MOH. The eCHIS was deployed in 11 woredas across six regions (Oromia, Amhara, Tigray, Afar, SNNP, and Sidama). In addition, the Activity provided intensive training to zonal, woreda and health center focal persons, and 605 health extension workers (HEWs) during the reporting year.

In AY1, DHA, in collaboration with its subcontractor Dimagi, undertook more than 50 platform-level enhancements and stabilizations covering a range of updates to strengthen security, management of the locally deployed instance of eCHIS, system resilience and robustness, and reporting and data synchronization. Due in part to these enhancements, the system will be able to support the additional 605 HEWs. Dimagi also conducted two assessments, one of the eCHIS local server, and one of the mobile application. The two reports provide a roadmap during AY2 to improve monitoring, security, disaster recovery, maintenance, server hardware, preparation for scale, and an application optimization process.

The eCHIS steering committee, led by the Minister of Health, was revitalized to provide strategic leadership. In the third quarter of AY1, a national TWG was established to coordinate and lead eCHIS development and implementation.
DHA participated in the steering committee and the TWG.

1.1.2 Electronic medical record (EMR) and biometrics-based health facility patient card system: Support planning, co-creating, and selecting the right EMR solution for Ethiopia

OrbitHealth, sub-contracted by DHA, implemented the DHA-EMR project on April 1, 2020. The project was implemented in five phases: planning; requirement gathering; technical specification; infrastructure assessment; and EMR deployment in a single selected health facility.

SWOT and PESTEL analyses and an Agile Methodology were conducted to capture and understand all processes in health care institutions and to design an EMR system for practical application. Requirements were gathered from Tirunesh Beijing Hospital, a facility selected using a standardized EMR readiness assessment tool. The requirements were then validated with representatives from MOH and health professionals. The technical specifications and the information technology (IT) infrastructure requirements were analyzed, and the most suitable open-source EMR software—Bahmni—was selected using standardized and customized tools. The selected system was customized by the OrbitHealth team to the exact EMR requirements gathered earlier.

Following deployment, 46 administrative and 216 health care professionals were trained to use the customized EMR system. A “dress rehearsal” (i.e., simulation of the system) is being provided until the necessary equipment can be obtained to go “live”. As part of the monitoring and evaluation process for this project, a baseline assessment was conducted at the hospital to understand performance of the various services. The result of the baseline will be compared with the endline assessment to measure change brought by the introduction of EMR.

Various engagement sessions were held to empower and give stakeholders a sense of ownership of the EMR. Representatives of the MOH and the Addis Ababa Health Bureau were involved in all phases of the EMR system implementation process.

1.1.3 Health management information system (HMIS): Optimizing the system and building capacity at national scale

In this AY, DHA conducted supportive supervision in all regions of the country, covering more than 3,000 health facilities, woreda health offices, and regional health bureaus (RHBs). During the supervision, 1,104 (397 in Q3; 707 in Q4) health information technicians (HITs) and health professionals got OJT on the general implementation of DHIS2 and learned troubleshooting techniques for common facility problems such as restoring corrupted databases, configuring internet connection, restoring expired accounts, and generating reports. Secondary analysis of national HMIS data shows that report completeness and timeliness is improving. Figure I below shows the monthly completeness and timeliness over the last year. Overall, timeliness is scored lower than completeness (which is relatively constant), but it is improving.
As part of the DHIS2 improvement, DHA developed and piloted a multidrug-resistant tuberculosis (MDR-TB) tracking tool. The web-based management information system tool was developed using the DHIS2 platform.

The requirement-gathering involved key users and stakeholders who mapped out the MDR-TB program management workflows. Based on this workflow, a tracker app was developed and the subsequent deployments (pilot and large-scale) were conducted based on software development life-cycle principles. The approach aligned with the national MDR-TB paper tracking tool and the national guideline for tracking and treating MDR-TB patients. The tool was developed after an initial orientation with the MDR-TB national guideline author and a site visit to Alert Hospital. The system was then shown to experts from MOH and other important partners to get feedback to plan the next steps. Once the system was ready, an initial pilot test was conducted at St. Peter Specialized Hospital. Demonstration and discussion were held with the chief executive officer and the MDR-TB experts at the hospital.

Once the tool was pilot tested with health professionals in real settings, the initial product went live. In AY2, DHA will conduct a data quality review of the TB data from DHIS2.

1.1.4 HRIS: Support planning, co-creation, and selection of a human resources information system (HRIS) solution for Ethiopia

During AY I, DHA worked with the MOH to design and customize a new HRIS to meet stakeholders’ needs. Requirements were developed and prioritized with MOH along with a software roadmap to facilitate user participation.

After a planning workshop with the MOH, demonstrations and meetings were held to
review the system, discuss progress, and get continuous input. The new HRIS system, which is built on the open-source standards-based integrated HRIS, was customized based on the initial requirements and inputs. It underwent user-acceptance testing by MOH stakeholders and DHA.

With the HRIS, the MOH can track, maintain, and keep up-to-date information on the health workforce including training, qualification, and count of staff by cadre, facility, and location. These data can be used for workforce planning needs such as determining how to manage and deploy staff across facilities to ensure the right balance of skills are available, or surging staff needs during a pandemic. Interoperability will be a focus in AY II to enable MOH to share and access data from other health information systems.

Software development work on automation of the Human Resource Development directorate (HRDD) with prioritized features for early release has been done. The prioritized features have been selected in discussion with HRDD representatives. After showing the demo of the first design, feedback from the HRDD team was incorporated in the development process and the updated features are ready for testing (Figure 2).

**Figure 2: Integrated Human Resource Information System Dashboard**

Through collaboration with the MOH and other partners, the first TWG meeting was held with stakeholders including USAID and Health Workforce Improvement Program (HWIP). This was followed by multiple meetings with MOH directorates and HWIP to discuss HRIS activities. In parallel with the above activities, preparation for data migration, including in-depth discussion with IntraHealth on how to handle migration of data from the old system to the new one, was completed. As with any data migration effort, it required careful analysis and review and was performed in consultation with the MOH team and the DHA technical team.
**Sub-objective 1.2: Strengthening supply chain and regulatory information systems**

**1.2.1 Ethiopian Pharmaceutical Supply Agency**

**1.2.1.1 Electronic logistics management information system (eLMIS)-EPSA**

In this AY, DHA supported the Ethiopian Pharmaceutical Supply Agency (EPSA) in maintenance and support of the current system (Vitas) to ensure stable operations at all levels of the agency (i.e., center and hubs). New features and major improvements that ease and speed receipt, put-away, restock, distribution, financial, and fleet management, have been added to different modules of the system. Specific major achievements include a new reporting and requesting form (RRF) design based on six-month adjusted and weighted moving average consumption of refill stock at the hub for all items, including programmatic drugs like TB and malaria, which helped EPSA hubs make requests online with a better consumption report; a new feature to increase picking performance at warehouses; better fleet management; and mitigation of poor warehousing practices. Improvements to Vitas data entry page and count sheets printouts eased and sped data reconciliation between warehouse managers, distribution team, and finance, which aided the annual inventory activity and performance optimization to handle user traffic. In addition, it brought visibility of the contract management system and improved control of purchase orders.

A bi-weekly sustainability meeting has been taking place since the beginning of the Activity year to transition system ownership to EPSA.

The team planned and performed various capacity-building training; managed transition of end-user support; implemented a communication strategy between end-user support; and developed helpdesk and other activities.

A total of 105 EPSA staff received Vitas refresher training. In the second quarter of the year, a three-day refresher training regarding the current system was given for 42 EPSA IT employees (12 female and 30 male) working at different levels of the EPSA. The training included a session to help trainees diagnose and fix problems. DHA has also conducted a two-day online training in the third quarter of the year for 63 EPSA employees (20 female and 43 male) on the inventory module of Vitas to aid the annual inventory.

The Activity continued to help EPSA fix bugs and provided remote Vitas support. As part of sustainability, transparency, and auditable communication, DHA installed an issue tracking tool called JIRA. One-hundred-eighty-one issues were reported from all over EPSA sites since February, 2020. Of these, DHA resolved 180 (99.4%). In addition, the DHA helpdesk team reported 455 JIRA issues, 413 (90.7%) of which were resolved. The sustainability plan is for EPSA to resolve those issues in-house. Major challenges to this plan are lack of qualified personnel and hardware device procurement, both of which EPSA is working to resolve (Figure 3).
A system enhancement workshop was organized by DHA following a request from EPSA. About 105 enhancement ideas were proposed and discussed with participants from EPSA central and hubs in the last quarter of the year. Of the ideas, 31 were either invalid or were already in place. The rest are under analysis and development, including the following major requests:

- Modifications to the procurement module of Vitas to accommodate a new procurement agreement between suppliers and EPSA to maintain the cost of items for 3 years.
- Hub to center RRF formula and design change to accommodate items that are not on the EPSA procurement list.
- Introduce electronic signatures on documents exchanged between warehouse managers and the finance department.
- Reinitiate contract management system and transit mobile app and,
- Add key performance indicators (KPIs) to Fanos dashboard and redefine existing KPIs.

EPSA developed a data governance policy to align business goals with IT infrastructure and operations. DHA contributed to and facilitated the process. Development of an online requisition system has also been finalized. The change will help health institutions process orders through a website without any paperwork. This will eventually eliminate time spent to fill the order and save person-hours. It also protects individuals from COVID-19 by limiting human interaction.

Within the scope of the center of excellence (COE) implementation, EPSA received support that led to better services at the health facili-
ties, which in turn helped avoid stock ruptures improving service quality for patients. DHA supported the introduction of user management concepts to the warehouses which helped EPSA manage access and functionality. Another major improvement was to clean data created from Vitas that addressed fraudulent labeling of warehouses to pallet locations. This activity increased the accuracy of warehouse utilization reports.

DHA also gave OJT refresher training on the warehouse management application to capacitate Adama Hub users. The Activity helped EPSA develop different reports (e.g., empty location, pending receives, inventory start date, stock with volumetric and fast-moving products lists) with a variety of analysis and performance comparability.

DHA has been continuously supporting and monitoring KPI dashboards. The DHA team participated in a workshop to discuss and gather new requirements, which included new reports that supported the monitoring and evaluation process and new features and modifications on the existing dashboard. These requirements have been organized and prioritized with the EPSA team. Among the identified activities, 30% of the software development work is completed. In addition, DHA sent various KPI reports (line fill rate, product availability, stock according to plan etc.) with EPSA and USAID for further analysis. DHA completed 5 KPIs of 12 requested by the Reproductive Health Supplies Coalition to understand the effects of COVID-19 on the supply chain for sexual and reproductive health medicines and products. The Activity also continued supporting the Fanos supply chain dashboard. An automation of pipeline and months of stock ad hoc reports were produced. Following the new RRF format change at EPSA, DHA revised the RRF dashboard during this reporting year. Extract Transform Load process improvement reduced the time from more than 20 to 5 hours on average.

Moreover, DHA generated and shared an ad hoc report on stock on-hand; wastage rate; procurement; consumption data for HIV, Malaria, TB, lab reagents; national consumption of all products managed by EPSA; and more. The Activity supported the long-lasting insecticidal net (LLIN) program dashboard and LLIN woreda dashboard, and captured planned quantity for each woreda. Minor and major updates were incorporated on the woreda dashboard to enable end-to-end visibility across the supply chain.

1.2.1.2 eLMIS) facility store and dispensary level

eLMIS (Dagu 2.0) is an open-source platform, independent and custom software solution designed to work at hospitals and health centers for supply chain management and inventory control. Currently, its store module has been installed in 127 facilities, and the dispensing unit module in two facilities (St. Peter Hospital and Maychew Health Center) for piloting in the Addis Ababa City Administration.

Dagu 2.0 is developed to operate for many years with minimal support and low maintenance cost. It’s capable of generating stock status, cost, activity, and redistribution reports that aid users with waste reduction and cost efficiency. The software is also capable of handling multiple stores within a facility. This feature enables
users (i.e., store managers) to independently manage their inventory and generate reports specific to their store. It provides aggregate reports for facility heads and other higher ups for the purposes of control and decision making.

In this AY, 533 Dagu (this number includes facilities with Dagu 1.0) hospitals and health centers received onsite support from the DHA field team (287 in Q3; 246 in Q4). The major activities performed during supportive supervision were resolving software and hardware issues, checking system and data quality, and all processes of using the system by the facilities.

On-the-job training was provided to 130 (30 female and 100 male) HITs on system use, report generating, data capturing, troubleshooting, and user support such as restoring Connection String Corrupted Database, reinstalling Dagu PCs occupational standard (OS), and performing Dagu sync configuration. Dagu 1.0 was upgraded to 2.0 in 126 facilities (52 health centers and 74 hospitals). Currently, these facilities are capable of generating RRFs electronically and are able to print the RRF or export it to Excel for processing. Facilities with internet access are also able to sync the RRF to their respective EPSA hubs directly. During the last quarter, 10 health facilities (7 hospitals and 3 health centers) with Dagu 2.0 were able to send RRFs electronically to EPSA’s system (VITAS).

Multiple rounds of training were given to the implementation team to improve the level and quality of support provided to facilities implementing Dagu 2.0, and remote support was provided to these facilities to supplement site supervision. A total of 396 support issues were reported from 126 facilities, 29.9% of which were from Dagu 1.0, and 70.1% from Dagu 2.0. About 50.1% of the facilities were hospitals and 42.2% were health centers, while the remaining requests for support were from the MOH, RHBs, and refugee camps. Of the 396 issues reported, 76% were resolved on the call day; 13.1% were in the process of being resolved; and 10.3% required onsite visits to resolve the issue.

Major activities undertaken in this AY include work on data visibility in the form of an internal monitoring tool and Datamart (which is in its schematic design stages) to generate a stock status report from all facilities. The former helps in the proper follow up and support of the product, and the latter increases visibility and facilitates decision making. In addition, new reports that track sales and give quick insight to measure workloads and performance of service providers were generated, which will help create financial transparency between dispensary unit, management, and auditors. Facilities are allowed to have multiple stores and have each manage its own stock, generate its own RRF, and view its own reports. In relation to this, an inventory module was developed to allow each store to conduct verification of the physical presence of its products. There were also improvements made to the RRF and EPSA hub sync, which enabled items with EPSA preferred pack alternates (if unavailable) to sync to Vitas. This greatly increased stock resupply.

For the dispensing unit module, the Activity developed the inventory and the loss and adjustment modules. The inventory module enables users to record and update current stock while the loss and adjustment module allows users to adjust lost, damaged, or found. In addition,
and sales reports have been included to aid in the running day-to-day activities of the users. Modifications have also been applied on how patient data were recorded, prescriptions evaluated, and issued based on feedback from MOH and the pilot users.

**1.2.2 Ethiopian Food and Drug Authority**

**1.2.2.1 eRIS Federal**

DHA supported Ethiopian Food and Drug Authority (EFDA) in the management and development of electronic regulatory information systems (eRIS). In response to COVID-19, DHA supported EFDA in expediting the licensing process of COVID-19 item importers and manufacturers. In addition, an alcohol tracking feature was added to i-Register to manage the quality of sanitizers produced.

Following EFDA’s agreement to work with Ethiopian Custom Authority in using a single point of entry (POE) for importers, DHA supported the development of application processing interfaces so that the Electronic Single Window, a one-stop service system that allows traders to submit all import/export-related requirements, can consume information from eRIS to be used at import permit application and port clearance stages.

**i-Register**

i-Register is a web-based management information system that automates medical and food product registration application submission, screening, review, and market authorization processes. It is an application that allows importers to apply for market authorization and receive certificates for different types of registration applications.

Major activities completed on i-Register in this AY include addition of new modules on medical device variation and renewal; improvements on dashboard and report filters, internal file and log management, and display structure of further information request process; addition of multiple reports both on the eRIS app and on public pages; addition of permission allowing all local agent types to process market authorization certificates, void and reprint permission for food notification certificates; and finalization of requirements for optimizing the application workflow. These improvements helped clients’ access in eRIS to become more flexible while acquiring information about the status of their application process. In addition, the system can retain information that will give EFDA more control and visibility over the data and process.

**i-Verify**

A new mobile application named i-Verify was designed to track and trace health commodities from manufacturer to point of issue throughout the health import process and supply chain. It can be used at any point in the supply chain to verify the authenticity of a product. The application helps the public identify illegally imported commodities and report them to the regulatory authority.

**i-Import**

i-import is an open-source, online application that allows importers to apply for and receive permits to import medicines and medical de-


vices online. Activities completed on i-import included addition of a feature that allow importers to apply for permit requests for accessories and spare parts, and new cost types (maintenance, turnkey, and installation) for pre-import permit applications. This has made the import module more comprehensive in terms of the types of products processed through the application, allowing both clients and EFDA to access most product types in the same place.

i-License

i-License is an application that allows importers, exporters, wholesalers, and manufacturers to apply for a certificate of competency online and get their certificate in a short time. Once a facility is registered via i-License, it enters the market authorization and import permit process that is managed using the i-Register and i-Import software application respectively.

Major activities completed on i-license include addition of features on professional configuration and expired temporary certificate of competency extension; addition of tobacco department; improvements on change application type, specific product detailing for medicine manufacturers; and handling of voided certificates; addition of professional requirements for cosmetics applications; and assistance to EFDA in preparation of documents for International Organization for Standards certification.

Close to 7,000 (2,000 in Q2; 2,500 in Q3; and 2,500 in Q4) requests for support, of which 95% were resolved, were reported through the phone support system. During this period, 10,334 new users gained access to eRIS, and 38,000 logins were reported.

DHA organized various training and workshops to familiarize users with the new features and to refresher them on existing features. The eRIS refresher training was given to 114 (90 male and 24 female) participants from the 5 branch and EFDA’s main office. The training was conducted remotely because of the COVID-19 pandemic. EFDA Hawassa i-License personnel were trained on i-License functionalities, and a three-day workshop was conducted to develop a roadmap for future EFDA eRIS activities.

1.2.2.2 Track and trace

EFDA in collaboration with the MOH led the pharmaceutical traceability project implementation to combat counterfeit pharmaceutical products, increase visibility of status of stock en route, and ensure secure transactions of products throughout various systems and processes. Track and trace tracks products entering the country and traces the product transaction process throughout different parts of the supply chain. The product in the supply chain is tracked by the information flow that is captured by the various products in the supply chain hierarchy (eRIS, Vitas, etc). Making this data traceable and visible to different sectors is vital for improving the quality, safety, and efficiency of the commodities in the transaction.

Further, upgrading the current system PDS (Product directory services), the project adopted and implemented the National Product Catalog (NPC), which ensured the country was using a global standard for product registry and identification, making data exchange for pharmaceutical and other products more easier at a national and global scale.
The first step in implementing the traceability process was to design the process in which tracing products could be regulated within the country regulatory body (i.e., EFDA). The Global VAN (GVAN) team and Global Health Supply Chain - Procurement Supply Management (GHSC PSM) shared other countries’ experiences in centralizing product catalog and tracing shipment information along with technologies for implementation.

Two main tasks were identified under track and trace. The first was tracking the product in accordance with the Traceability Directive and Global Standard One (GS1) standards; the second was tracing the visibility of the product globally by linking it to shipment information provided by manufacturers.

The NPC follows the master data guideline drafted by Pharmaceutical Traceability Master Data TWG, which informs and drives decision-making across the entire supply chain. NPC attributes were configured and set up in accordance with the Traceability Directive and GS1 standards. The development team selected Akeneo, the Product Catalog Management Tool (PCMT) to customize and manage the NPC. Akeneo’s configurability and openness for integration, along with experience with similar products in other countries, made it the optimal choice. The attributes configuration was done according to the master data guideline.

The Activity will take two approaches to populate product data into NPC. The first is to migrate product lists already existing in the legacy system being mapped to Global Trade Item Number (GTINs). The second data source will be the manufacturer sent through GVAN before advance shipment notice (ASN) (Figure 4).

Figure 4: A National Regulatory Information System Flow Chart

System Overview of the National Regulatory Information System

- i-License (Import, Manufacturers)
- i-Register
- Procurer (EPSA, UNICEF, Private...etc)

NATIONAL TRACEABILITY SYSTEM (NTS)

- Basic Product Info
- NPC (Item Lookup)
- Import Permit
- PreShipment Notice
- Data Broker (Global VAN, Others.)
- Manufacturers (A)
- Manufacturers (B)
- Manufacturers (C)

- i-Verify
- Port Clearance
- Batch Expire GTIN
- i-Verify
Following the customization and development of the NPC, a supportive product, mobile NPC, will be developed. This product is needed to make product identification portable and reliable. The mobile application will be able to scan barcodes and identify products available in the NPC, and can guarantee the authenticity of the product at any point of the process. Users will be able to see details of the products and identify their legitimacy. The application is cross-platform compatible and runs on Android and iOS devices alike. It can easily be configured to work with a compatible catalog (i.e. Akeneo).

Due to COVID-19, access to warehouses for data collection was restricted, but DHA was eventually able to help collect GTIN products found in warehouses across the country. A total of 340 GTIN products under family planning, HIV, TB, and malaria were collected. Of those, 144 unique GTIN products were identified. These products were mapped to existing national ID from legacy product registration system in product directory service and imported to the NPC database for reference.

The other track and trace activity focused on tracing shipment information from manufacturers electronically for transactional processes. The use of data brokers such as GVAN was needed to get manufacturer data. The data broker will give Ethiopia a standard list of information from manufacturers as defined by the team in reference to the processed and existent data fields found in different stages of the supply chain. Earlier activities involved gathering information on the existing shipment data within the legacy systems such as Vitas and eRIS. Shipment attribute lists were deliberated on and selected according to need.

The first iteration of the ASN data transfer through VAN was started with one manufacturer (Mylan Laboratories Ltd.) to test integration and data flow. Ethiopia will use the B2B (business-to-business) client to receive manufacturer ASN through VAN. The E2Open (a B2B provider of cloud-based on-demand software for supply chains for computer, telecom, and electronics systems, components, and, services) team gave DHA access to the B2B service client and assisted in the configuration of the server, which is used to transfer shipment data from manufacturer to Ethiopia. After establishing and finalizing the required fields to be expected from manufacturers, a regression test was conducted to see if the data being sent fulfilled the necessary requirements. A production version of B2B client has been installed and data from the manufacturer through VAN syncs to the database every 30 minutes.

**Sub-objective 1.3: Data analytics platforms**

**Analytics dashboard development for sub-systems**

In this AY, from a target of 120, an average of 97 people used Fanos dashboard every month (111 in Q2; 90 in Q3; and 90 in Q4), about 81% of the target. In addition, to enhance the number and capacitate users, DHA conducted OJT at EPSA. Following the training, there was a 62% increase in the number of new users who logged into the dashboard.
Most dashboard users were EPSA hub and central employees. The remaining were from MOH, RHBs, Global Fund, Bill & Melinda Gates Foundation, Chemonics, GHSC PSM, and USAID. The Activity also changed the analytics platform from Google (which no longer supports the mobile analytics) to Firebase.

Data triangulation into one platform is one of DHA’s successes this year. DHA organized seven different datasets from different sources into one platform using STATA and Tableau. Datasets from different sources were mapped and exported to Excel and CSV. Syntaxes were prepared and are being updated for common alignment, cleaning, and analysis using STATA. Visualization of analysis outputs is conducted in Tableau and is a continuous process. An example of COVID-19 dashboard can be obtained by clicking here. The dashboards contain the national 24-hour lab test result including cases, recovery rate, positivity rate and death rate; travelers’ history; quarantine center and hotel information; toll-free information; suspected cases and rumors profile. Moreover, the dashboard contains statistical models to forecast deaths and new cases, and has a heat map to indicate the geographical epidemiology pattern of the pandemic.

Sub-objective 1.4: Data management services

This sub-objective focuses on landscape assessment of data warehousing, development and documentation of data management procedures, and implementation of the data warehouse roadmap. These activities were postponed to AY2 due to COVID-19.

Sub-objective 1.5: Support to improve information and communication technology (ICT) infrastructure and connectivity at health facilities

1.5.1 Maintenance and support of HealthNet

The HealthNet is a cross-cutting platform for fulfilling the objective of the DHA. It is fundamental in transforming the existing health service delivery to a more digital and robust system that enables more effective and efficient data collection, analysis and transmission including production of timely reports.

DHA’s local entity lead for this component is WebSprix IT Solutions. This group identified the root causes of the telecom problems within the existing IT infrastructure system in Ethiopia. WebSprix was tasked to propose a robust infrastructure to improve data collection, distribution and management of the health system. In addition, Websprix aimed to support the maintenance of health facilities with dysfunctional HealthNet.

WebSprix conducted an assessment of the status of HealthNet at each facility at federal and regional levels. A total of 380 facilities were identified and assessed, and the data from these facilities were collected and analyzed. The assessments showed that most of the issues encountered in the health system were installation problems. The required materials and devices were then identified and procured by DHA. This was followed by maintenance of dysfunctional HealthNet at the federal level. In the second Activity year, the maintenance of HealthNet at facility level in the regions will
start through subcontracting youth groups in the respective regions with remote support from WebSprix team.

Following the assessment, TB-Lab LAN installation was made functional and maintenance of HealthNet LAN connection was done in 35 facilities. DHA was also able to install an online monitoring tool in the MOH premises; this tool will monitor the status of the HealthNet system at each facility.

In addition, the project developed health IT infrastructure management and operation documentation, such as system operational procedure (SOP) documents; troubleshooting and maintenance manuals; standard operation and maintenance protocol documents and other related manuals. These materials will support reliable operation and service continuity of the HealthNet system.

1.5.2 National shared IVR management system

Interactive voice response (IVR) is a useful tool that supports the broader community, enabling individuals to use their mobile phone to call a general number and receive commonly requested information. JSI has supported earlier requests by the MOH to support their IVR system and has continued to do so under the DHA.

During AY1, DHA continued to support the national shared IVR management system by assessing the existing IVR system at MOH and identifying equipment for the IVR system. Currently, DHA is awaiting the procurement of the required equipment.

Sub-objective 1.6: Improvement in Integrated Health Information Systems

1.6.1 Support the Ethiopian eHealth Architecture and interoperability implementation

DHA has been supporting MOH to realize the Ethiopian eHealth Architecture. As part of this initiative, DHA has played a key role in developing two shared services that are foundational for interoperability between different subsystems: the Master Facility Registry and the National Health Data Dictionary.

Master Facility Registry: DHA continued to enhance the Master Facility Registry (MFR) to address new requirements and improve the system’s performance. The DHA team has completed development of new features on MFR, including: 1) finalizing features for configurable administrative units (regional, zonal, and woreda); 2) bulk moving of facilities to new administrative units; and 3) updating location information for facilities with geospatial coordinates. DHA has also handed over the technical documentation and source code for the current version of the MFR to the MOH. In addition, a three-day training has been provided for the MOH software developers, including code walk-through and an overview of the technologies used for the development of the MFR.

In parallel, DHA is also conducting a series of consultations with MOH and DUP to explore options to replace the backend of the current MFR platform. The project conducted a land-
scape analysis to understand backend and frontend technologies and platforms available as global goods that can be easily customized to meet the MOH requirements. Accordingly, it was decided to replace the current Resource Map-based MFR of the MOH with a better, more flexible and (Fast Healthcare Interoperability Resources) FHIR compliant solution. The DHA team is currently working on understanding the architecture and code base of the Global Open Facility Reconciliation and exploring how to use HAPI FHIR server to meet the data exchange requirements. The DHA team is also working on a roadmap to quickly develop the MFR 2.0 and migrate the MFR data to the new platform smoothly.

National Health Data Dictionary: DHA developed and implemented the first version of the upgraded National Health Data Dictionary (NHDD) Mobile Pocket (the NHDD Mobile App) to give health care providers easy access to disease code and facilitate reporting on the causes of morbidity and mortality. The mobile app is expected to significantly improve data quality in disease reporting by enhancing the ability to search and capture diseases. Moreover, a full description of diseases are added in the dictionary for a significant number of diagnoses. User acceptance testing of the NHDD Pocket has been conducted and the app is made available on the Google Apps Store. Developing the dictionary will continue with other domains that MOH will prioritize for inclusion in the NHDD.

1.6.2 Support the MOH and agencies with development of apps to improve system delivery (blood bank, clinical, and family health guidelines)

In the first Activity Year, DHA improved the functionalities of the Clinical Health Guideline mobile application. The clinical guideline App is developed and was released for users at the primary health care level, including health posts, health centers and primary hospitals. As per feedback collected from users, the following new functionalities were added to the Clinical Guideline pocket mobile app:

1. Updates and bug fixes as per new design.
2. Data inconsistency fixes and Add new Data additions.
3. Add a footer section (Footnote) for each symptom/diagnosis and,
4. Add a new Amharic explainer video.

DHA has also provided routine maintenance and troubleshooting support to the users of other apps developed during previous projects.

Objective 2: Build a culture of data use

Building the culture of data use is one of the two pillars of the IRR. In this Activity reporting year, DHA established a system to produce fresh and high-quality evidence for decision makers. This entailed connecting woredas, conducting baseline assessments and preparing costed interventions.

Sub-objective 2.1: Rollout data use strategies

The health system is producing a growing volume of data that is receiving increased attention, particularly after the occurrence of
COVID-19. The DHA is working with the MOH, USAID and other stakeholders to document previous lessons to maximize the rollout of data use strategies.

During the first implementation year, DHA conducted a desk review on data use strategies. Based on the findings of the desk review, DHA identified critical steps to improve the rollout of data use at different levels of the health system. The DHA followed the data use framework shown in Figure 5 to cascade different tools.

Figure 5: Proposed Data Use Framework

FRAMEWORK TO BUILD THE CULTURE OF DATA USE

1. **BARRIERS**
   - Understand existing barriers using: Assessments (PRISM); is there additional assessment tool need?

2. **ALIGNMENT**
   - Map and engage stakeholders; identify the needs of stakeholders, identify information need for decision making.

3. **ACCESS**
   - Make data more accessible, available and easier to use interoperability, maturity assessments, Design effective data communication, visualize gaps, target programs and improve service, strengthen multi directional feedback mechanisms, use geographical data to target health programs.

4. **RELIABILITY**
   - Decision makers should have confidence in available data by accessing if data are of higher quality.

5. **CAPACITY BUILDING**
   - Building individual and organization capacity on data use: data demand and use, DHIS2 functions and data use for health information system strengthening, basic data analysis and interpretation for health programs, building leadership for data demand and use.

6. **SUSTAINABILITY**
   - Strengthen organizations and processes for data use: appropriate procedures and policies for sharing, reviewing, and using data; supportive supervision on data demand and use; Governance.

7. **MEASUREMENT**
   - Monitor results of data driven decisions, document success stories, produce stories.
The Activity has been working in collaboration with the MOH and other implementing partners at national and regional levels to generate real-time data. This includes active engagement within the data use TWG at the national level and analysis of current and historical data. Currently, DHA is actively producing information on the impact of the COVID-19 pandemic on program service coverage and uptake.

In AY1, DHA and USAID prepared a concept note for monitoring routine program uptake in parallel with the control of the spread of COVID-19. A total of 21 indicators that include maternal and child health, communicable diseases and supply chain were analyzed, updated monthly and shared on a regular basis. Figure 6 shows selected examples of analysis conducted from HMIS on key indicators.

Figure 6: Trends in Selected Maternal and Newborn Health Indicators Coverage in Addis Ababa

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Pre-Covid</th>
<th>Post-Covid</th>
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</thead>
<tbody>
<tr>
<td>ANC4 (Antenatal care (ANC) coverage-First visit) (%)</td>
<td>191.8%</td>
<td>147.1%</td>
</tr>
<tr>
<td>ANC4 (Antenatal care (ANC) coverage-Four visit) (%)</td>
<td>153.2%</td>
<td>117.7%</td>
</tr>
<tr>
<td>SBA (Proportions of births attended by skilled health personnel)</td>
<td>160.4%</td>
<td>100.3%</td>
</tr>
<tr>
<td>Early PNC (Early postnatal care (PNC coverage)</td>
<td>150.8%</td>
<td>93.3%</td>
</tr>
</tbody>
</table>

This figure compares ANC1 & 4 coverage, skilled birth attendance and postnatal care before and during COVID-19 in Addis Ababa, where more than half of COVID-19 cases are reported. The numbers show a steep decline in all indicators during the COVID-19 pandemic. First antenatal care attendance declined by 23.1%; attendance at four or more ANC visits dropped by 23.2%. Similarly, skilled birth attendance and postnatal care declined by 7.5% and 38.1%, respectively, during the pandemic.

Another dashboard prepared by DHA contains analysis of the national connected woreda database from the routine HMIS. The DHA reviewed the data from DHIS2 on the availability of connected woreda information at a woreda level. As in the table below, data started to flow beginning March–August 2019. A total of 122 woredas reported connected woreda information status last year; an additional 106 woredas reported in the following periods (Table 1).
Table 1: Connected Woredas Reporting Status by Month, August 2019.

<table>
<thead>
<tr>
<th>Region</th>
<th>Meg to Neh 2011</th>
<th>Mes to Yek 2012</th>
<th>Meg to Neh 2012</th>
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<tbody>
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</tr>
<tr>
<td>Tigray</td>
<td>122</td>
<td>228</td>
<td>228</td>
</tr>
</tbody>
</table>

Data use, data quality, and infrastructure were available in 40%, 30%, and 30%, respectively, of the 228 connected woredas. The percentages are computed from assessment results from the standard national assessment tool. A dashboard showing the status of each woreda is prepared in Tableau, and linked with DHIS2 for in-depth analysis. A sample dashboard organized by zones and sorted by the total result is shown in Figure 7. Only one woreda in the Central Zone of Tigray scored 93%; this woreda is being labeled as a model for the IR implementation. Similarly, Adigrat and Gulomekeda reported more than 90% in Eastern zone of Tigray region.

Figure 7: Assessment Scores of Data use, Data Quality and Infrastructure by Zone in Tigray Region of Ethiopia, September 2020.
The connected woreda dashboard helps monitor the progress of woredas along the connected woreda pathway. An example is shown for all the woredas indicated in three different colors in Figure 8. The green color shows woredas that scored 90 and above (model woredas); pink indicating candidate (scoring 65 and above); and red indicating emerging (scoring less than 65). The majority of the woredas are classified as candidate woredas that will transform to model woredas later.

Figure 8: National Connected Woreda Assessment Score, September, 2020 HMIS Data.

Data analysis in AY1 included COVID-19. DHA supported data analytics of COVID-19 dashboards from different datasets—travelers, patients summary, and reports of MOH and EPHI—to obtain insight on the trends and patterns of COVID-19. This is one of DHA’s achievements related to data triangulation. Figure 9 shows the national trend in COVID-19 positivity as collected from 24-hour lab test results. This dashboard is updated and shared weekly for all indicators, while test results are monitored on a daily basis.

Since the first COVID-19 report in early March 2020, trends in total lab tests, test results and positivity rate are described below. The number of lab tests increased dramatically, from less than 200 per day before April to more than 20,000 per day in August, followed by a steep decline in September. This is mainly due to the national lab test expansion by MOH and EPHI until August and the stockout of test kits in September. The number of positive test results also shows a similar pattern, with a maximum record of 1,829 cases in August. Given the fact...
that the daily lab test varies reflecting different denominators, the positivity rate is a relatively strong indicator for monitoring the progress of the pandemic. Until June 15, the national positivity rate was consistently below 5%. Following mid-June, the positivity rate was consistently above 5%, with peaks in July (10%) and August (9%). Recently, the positivity rate was reported to be above 10% with a peak of 12.87% beginning in October.

Figure 9: Trend of COVID-19 positivity, 24-hour Lab Test Results and Number of New Cases, March to September 2020

In this reporting period, DHA in collaboration with USAID prepared a workshop on the national status of essential services before and after COVID-19. The workshop was attended by all implementing partners. The presentation focused on data quality dimensions and key programmatic indicators such as MCH, communicable and non-communicable diseases. Some regions performed better in service delivery reporting in terms of timeliness and completeness. Lessons from these regions will be sent to low-performing regions. The analysis included the performance against targets. Partners also attributed the declines in performance due to COVID-19 pandemic through their routine observation.
The supply chain performance showed consistently high (> 90%) product availability for tracer commodities through March 2020. Stock according to plan for tracer commodities (stocks between maximum and minimum stock levels) diminished from 26.6% in August to 10% in September, 2020. Line Fill Rate dipped in March 2020 (53.1%) from the preceding recent months; normally it was consistently above 60% with a peak of 78.2% in July 2019.

**Sub-objective 2.2: Supporting implementation of the connected woreda program**

DHA continued working to improve the culture of data use by supporting 20 woredas along the maturity pathway. In this reporting year, DHA in collaboration with RHBs identified woredas that required support on connected woreda implementation. Moreover, the Activity conducted the first baseline assessments in 17 of the 20 selected woredas.

Before deploying staff for the assessment, DHA trained field data use officers and IT personnel on the assessment tools. The tool was digitized and data were collected using tablets to ensure access to real-time data. Geo-spatial information was collected to monitor visits at each facility. Below is the distribution of 17 woredas based on the baseline assessment result. Eight of the woredas scored 65% and above, and thus are candidates to be model woredas; the other woredas are Emerging woredas. The score of data use is measured out of 40% with maximum record at Miqet woreda. Three woredas scored below 50%, indicating a need for major effort to improve the data use and quality components of the checklist (Figure 11).

![Figure 10: Monthly Supply Chain Performance, Jan 2019–March 2020.](image-url)

<table>
<thead>
<tr>
<th>Life fill rate (%)</th>
<th>Product Availability (%)</th>
<th>Stocked according to plan (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 19.1</td>
<td>19.1</td>
<td></td>
</tr>
<tr>
<td>Feb 20.1</td>
<td>20.1</td>
<td></td>
</tr>
<tr>
<td>Mar 16.6</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>Apr 16.8</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>May 20.6</td>
<td>20.6</td>
<td></td>
</tr>
<tr>
<td>Jun 16.0</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Jul 26.6</td>
<td>26.6</td>
<td></td>
</tr>
<tr>
<td>Aug 23.4</td>
<td>23.4</td>
<td></td>
</tr>
<tr>
<td>Sep 23.7</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td>Oct 20.8</td>
<td>20.8</td>
<td></td>
</tr>
<tr>
<td>Nov 16.7</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>Dec 18.9</td>
<td>18.9</td>
<td></td>
</tr>
<tr>
<td>Jan 19.6</td>
<td>19.6</td>
<td></td>
</tr>
<tr>
<td>Feb 12.0</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>Mar 11.4</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td>Apr 10.9</td>
<td>10.9</td>
<td></td>
</tr>
<tr>
<td>May 11.8</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>Jun 10.4</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Jul 9.1</td>
<td>9.1</td>
<td></td>
</tr>
<tr>
<td>Aug 10.2</td>
<td>10.2</td>
<td></td>
</tr>
<tr>
<td>Sep</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
After the baseline assessment, DHA conducted site visits and organized meetings to identify costed interventions for each of the woredas to improve their status along the maturity pathway. The interventions are jointly identified with all woreda performance monitoring teams (PMTs). The project carried out root-cause analysis and identified roles and responsibilities. The interventions included procurement of different materials like HMIS unit furniture, computers, capacity building training, supporting data use review meetings and mentorship. In all the woredas, cost intervention was completed and intervention began in the last quarter of the year. The most common intervention across all the regions was review meetings to create accountability, prepare action plans and revitalize the performance management team (PMT) in data use. Start-up monitoring and review meetings show that the PMT investments have great potential to create accountability and DHA will do a midline assessment every six months to measure changes. In AY2, DHA will help MOH to develop a plan for sustaining a high-performing PMT.

Sub-objective 2.3: Supporting creation of IR model hospitals

DHA in close consultation with RHBs established model hospitals. The hypothesis was: “When fully supported by the woreda health office and with sufficient mobilization of resources, model hospitals can be a key component to achieving the connected woreda strategy.” IR hospitals were mainly identified through consultation with the regions. For greater impact, DHA proposed high TB caseload hospitals not covered by other partners for IR. DHA further reviewed data on DHIS2 for availability of IR hospitals; conducted a baseline assessment; defined tailored interventions; and cascaded the interventions. In AY I, DHA conducted baseline assessment and prepared costed interventions in 10 hospitals. However, two of the hospitals assessed were entirely COVID-19 treatment centers and were replaced with other facilities.
While intervention for hospitals is going on, DHA will continue assessing the replaced hospitals and supporting IR implementation.

Sub-objective 2.4: Building capacity of Health Science Colleges (HSCs)

2.4.1 Support federal and regional TVET and HSCs on curriculum development and rollout

DHA has been working with federal Technical and Vocational Education and Training (TVET), MOH, RHBS, and universities to build the capacity of HSCs. The plan is to equip HITs, HEWs, pharmacy technicians, and other last-mile providers to collect, interpret, and use data in digitized systems. One of the planned interventions in AY1 was to identify gaps in HSC training curricula and then develop additional curricula to ensure that graduates are ready to support IRR. The process of curricula review involves three steps:

- Review of federal TVET standards (e.g., occupational standards, or OS, of the Ethiopian federal TVET Strategy). The OS defines the occupational requirements and expected outcome related to a specific occupation.
- Review of the training curricula.
- Review of the assessment tool that determines a student’s competency/performance.

In AY1, DHA in partnership with DUP supported the MOH and the federal TVET to review the HITs OS. Accordingly, the OS document was completed, endorsed and approved by the MOH and the federal TVET. The OS includes all the relevant subsystems, data entry, troubleshooting, and reporting, quality, and use competencies.

DHA discussed possibilities for reviewing the curriculum with MOH and TVET. Both partners shared some roles and responsibilities with stakeholders. DHA is given responsibility to develop learning objectives for modules based on the unit of competence and performance criteria set in the approved occupational standard. Due to COVID-19, the curriculum review workshop was postponed to AY2.

2.4.2 Incorporate blended learning approaches into pre-service and in-service training

Training is one of the activities severely affected by the COVID-19 pandemic. Multiple in-service and some pre-service training were cancelled after the national state of emergency was declared to guarantee the safety and security of staff as well as trainees.

In this Activity reporting year, DHA in collaboration with MOH, DUP and HSCs identified the learning approaches and specific subsystems for blended learning. The priority subsystems identified are DHIS2 and Dagu. Modeled on previous JSI eLearning experiences, the DHA team and HSCs defined the learning goals for blended learning and conducted analysis of eLearning platforms that the MOH is currently using. The DHA also conducted a desk review of relevant documents.

During this reporting year, DHA in collaboration with other stakeholders developed draft blended learning modules for Dagu and DHIS2.
In AY2, a consultative meeting will be organized in the first quarter for relevant stakeholders to review the content and appearance of the draft eLearning modules. DHA will incorporate the inputs and comments from the consultative meeting and complete the eLearning modules.

2.4.3 Support the CBMP universities as COE for HIS sub-systems

The MOH is implementing a Capacity Building and Mentorship Program (CBMP) in six selected local universities. Each of the six CBMP Universities will eventually be designated as a COE for one of the HIS subsystems. In the first year of the Activity, DHA planned to support the CBMP Universities, through a grant mechanism, on their vision of becoming COE, including developing strong training programs in their area of focus, and forming linkages with HSCs to ensure that the HSCs have the resources they need to keep curricula and training methods up to date.

In this regard, DHA held several meetings and discussions with Mekelle and Jimma Universities to identify areas of COE and develop scopes of work, deliverables, work plan, budgets, and monitoring plans. The pre-award process of Mekelle and Jimma University has been completed. The universities’ technical and financial proposals have been developed, reviewed by the DHA team, and submitted to USAID for approval.

To engage a local technology company in the development and deployment of the electronic medical record (EMR), an expression of interest was announced inviting all interested eligible local private technology companies. A total of 11 IT companies have shown an interest to take part. Requests for proposals were shared with all local IT companies that applied to help them with the grant proposal (technical and financial) development. The deadline for submission of the grant proposal is October 29, 2020.

The Mekelle University award focuses on “a vision of becoming a national COE’ for Electronic Health Architecture (eHA) and interoperability. The Digital Health Research and Development Center at Mekelle University focuses on the following four major prioritized activities:

- EMR requirement specification and deployment.
- HIS interoperability maturity assessment.
- eHA RoadMap Preparation.
- Local eHA Academy Setup.

A similar grant to Jimma University focuses on becoming a COE in electronic Community Health Information Systems (eCHIS). The Public Health Department of Jimma University focuses on the following major prioritized deliverables:

- Establishing a physical center for eCHIS COE.
- Establishing eCHIS implementation woredas as learning sites for other implementers.
- Development and implementation of eCHIS advanced level trainings.
OBJECTIVE 3: GOVERNANCE

Sub-objective 3.1: HIS Governance Support

3.1.1 Health data access and sharing policy

Making full and effective use of health data for decision making ensures transparency and equity across the health sector while also improving the responsiveness of health care providers based on the latest, most accurate information. It also strengthens the integrity of management practices through swift and accurate assessment of situations. Health data access and sharing promote sustainable growth of the health sector and boost the quality of health care services and values. In this Activity reporting year, DHA in consultation with DUP drafted the health data access and sharing policy. The policy helps establish procedures for accessing health-related data (clinical, financial, administrative, and demographic) to users and stipulates that data be anonymized, available, and made available to users to benefit decision making using real-time data. It also addresses conditions and manners in which data files may be released to users for research and policy making while maintaining confidentiality.

DHA shared the draft policy and started a consultative meeting with PPMED on the next steps to finalize the document. Topics revolve around data access management conditions, mapping users and accountability procedures, procedures for accessing data by users, data transfer mechanisms, data request forms and the consequences of violations of the policy. The draft policy document is prepared to accelerate the pace of achieving the IRR objectives.

3.1.2 IT infrastructure management guidelines

The MOH is committed to ensuring equitable and affordable access to health services. The achievement of this vision requires a robust HIT infrastructure management within the existing context. The IT infrastructure management guideline is designed to help manage IT infrastructures and ensure appropriate resource utilization that leads to institutionalization of continuous service delivery and support throughout the MOH and its structures.

The guideline is meant to contribute to proper management and maintenance of IT Infrastructure across the health sectors. This helps make the IT infrastructure become reliable, robust, secure, and consistently facilitating efficient and effective business processes. The guideline was prepared by reviewing different resources, country regulations, training materials, IT vendor guides, and national and international standards. To minimize downtime and maintain business continuity, it provides structure and control of the functions responsible for diverse technical operations, management and maintenance of an end-to-end MOH IT infrastructure. This helps facilitate the delivery of the IT services to the intended business to meet all its agreed requirements and targets. DHA in coordination with MOH will continue working to support the finalization and approval of the IT infrastructure management guideline in AY2 (Figure 12).
3.1.3 Collaborate with DUP in the development of the National Health Information Act

The DHA, DUP and other stakeholders supported the ministry in the development of the National Health Information Act. It aims to establish a minimum national standard that sets out the rights and interests of a patient or health service user, and the associated national health care systems that support the health system.

During AY1, DHA reviewed the draft Health Act. The revision mainly focused on finding areas where DHA could contribute to improve the Act. In response, DHA identified two sections to assist MOH in developing the Health Act and worked on the sections accordingly. DHA worked with DUP to meet the legal requirement to establish the proper means of registering, maintaining, using and transmitting health information. In addition, DHA provided support on the “Confidentiality of Health Information” section of the Act.

3.1.4 Governance document compilation and engagement with MOH

During this Activity reporting year, DHA compiled the status of various HIS governance documents developed by DHA, DUP and the MOH. DHA has been working to incorporate the HIS governance documents into the IR booklet that
is under development by the MOH. The Activity had regular discussions with the HITD and the PPMED in ways of finalizing the governance documents. Following the discussion, focal persons were assigned from each directorate to work with the DHA governance team.

Sub-objective 3.2: Support MOH Innovation lab and digitization center

3.2.1 Finalize governance practice framework for digital health activity

The recent COVID-19 pandemic and the subsequent economic downturn pose threats to the health system. DHA has been trying to create the conditions and rules to bring impartiality, transparency and effectiveness in the implementation of digital health activities within the health care system in Ethiopia.

To coordinate and improve digital assistance, DHA developed the governance practice framework (Figure 13), a tool that enables managers and decision makers to recognize and plan vastly different projects in structured and predictable ways. The framework is comprehensive, scalable, and robust. It can help MOH in three practical ways. First, it describes all the things the MOH needs to do to supervise any digital product or service. Second, it lists all the resources MOH and DHA need to implement their activity. Third, it makes predictions in development and management of digital activities or projects into a manageable way that actually delivers stability. It also helps MOH to manage digital governance, which leads to better digital health quality, greater certainty, more time to focus on goals, and fewer problems for the digital team.

Figure 13. Proposed Governance Practice Framework for DHA
3.2.2 Introduce creative strategies in helping make the innovation lab a resource for both internal MOH and external health partners

As health systems struggle to keep pace with the demands placed upon them, innovation has become an overused buzzword. Nevertheless, because of COVID-19, the health care system in Ethiopia is striving to improve quality and patient experience through using a variety of digital tools. These challenges require new thinking and approaches to transform health care.

During this reporting year, the innovation lab was inaugurated. The lab can support the use of digital technology to improve health service delivery. It can be a place for building implementation and support capabilities to ensure government ownership of the systems. Following the launch ceremony, DHA in coordination with MOH supported the development of the lab’s creative strategy.

In addition, DHA in coordination with the MOH developed two infographics. The infographics showed the maturity and transformation path the innovation lab should follow, and depicted major implicit steps to make the lab evolve through time. It also helps promote systematic creativity to turn insights into customer value in a timely manner. It incorporates basic components for value realization and adaptability purposes; plays a crucial role in transforming the innovation lab culture; and positions the lab as an incubation center to implement sustainable digital health solutions and deploy two teams to work on eCHIS and HRIS projects.
OBJECTIVE 4: Support COVID-19 surveillance and tracking system development and implementation

This strategic objective focuses on supporting the Ministry of Health and Ethiopian Public Health Institute to develop and implement a COVID-19 surveillance and tracking system across the country. The Digital Health Activity (DHA) planned to provide technical assistance for customization and implementation of the system, information on best practices, develop and configure tools to expedite the dissemination of the lab results, and assist in the tracking of performance in achieving the surveillance capabilities. DHA has also planned to support the MOH and EPHI to analyze data on surveillance performance, identifying gaps in surveillance and recommending options for taking effective steps to support regions in addressing the gaps. Accordingly, in collaboration with DUP, DHA supported the development and implementation of a surveillance and tracking system in support of the GOE’s response to COVID-19. The following text describes the major DHA-supported systems during this reporting year.

1. Critical item availability

DHA developed a system to enable EFDA to monitor and control hand sanitizer quality, as part of the eRIS, facilitating registration and import approval for food and medicines. Manufacturers who received a temporary license to produce alcohol-based sanitizer can now use DHA’s quality control system to track the quality of their products in accordance with World Health Organization (WHO) standards. In the last quarter of the year, 68 new end users were trained for alcohol-based sanitizer tracking modules. In addition, DHA developed a simplified process to expedite licensing and registration of COVID-19 supplies. In the latest version of eRIS, applicants for expedited licensing, such as alcohol-based sanitizer manufacturers, do not have to enter the existing queue. The normal licensing process has been condensed, with fewer documentation requirements. Previously, it took manufacturers three or more days to obtain licenses. This version of eRIS is also designed to decrease the amount of physical time applicants spend at the EFDA—saving the time and resources of 39 applicants and EFDA staff. It also increases transparency and efficiency by allowing goods to reach the market more quickly.

2. Development and implementation of COVID-19 Surveillance and tracking system

DHA has been supporting the Ethiopian Public Health Institute and the MOH with the development and implementation of a DHIS2-based COVID-19 Surveillance and Tracking system. The system supports the enrollment and tracking of suspected cases; captures symptoms, demographics, risk factors or exposures; creates lab requests; links confirmed cases with contacts; and monitors patient outcomes. It is intended for health facility users, lab users, and national and local health authorities. The DHIS2-based tool facilitates surveillance workflows and automated analysis for key components of the routine and active surveillance while leveraging WHO-recommended protocols. The system also supports active case detection through contact-tracing, such as identification and fol-
low-up of contacts of a suspected or confirmed COVID-19 case. The Contact Registration and Follow-up Program registers each contact of a confirmed case as a new tracked entity instance (or person) and links him/her to the case in the COVID-19 Case Surveillance Program via a “relationship.” It has a simple, repeatable follow-up function that registers symptoms and any follow-up.

In addition, a POE health declaration system has been developed and implemented to record personal identification information including phone number, travel history, health symptoms, and their Ethiopian residence geo-location. The forms are generated via quick response codes at all POEs to provide unique traveler identification. Screeners from Ethiopia Public Health Institute (EPHI) will then digitally record travelers’ temperature and attach it to their digital record for 14-day monitoring and follow-up. It is assumed that a traveler enrolled in this program who meets the definition of a suspected case (i.e., an asymptomatic traveler registered at the POE who later develops symptoms) will be enrolled into the COVID-19 case surveillance program. This application automates the Traveler’s Health Declaration Form for Coronavirus Disease form, a paper form that all passengers are required to complete upon entry to Ethiopia.

DHA has also helped develop and implement rumor and suspected cases reporting and investigation tools for use by community members for self-reporting when they have COVID-19 symptoms. It also has a call center call capturing tool that provides information about where people can volunteer, request help, learn more about the pandemic, and report rumors.

During the reporting year, DHA has also supported the development and implementation of CommCare based community house-to-house screening system to serve as a data collection tool and job aid for nationwide door-to-door COVID-19 screening campaigns. The activity has also developed and implemented a health facility reporting app, a Toll-free recording app, WhatsApp and Telegram Helplines, and Rumor and suspected cases reporting and investigation app.

3. Support use of COVID-19 data for decision making through analytics and visualization support

DHA supported MOH and EPHI to develop a tracking dashboard to monitor COVID-19. The dashboard visually provides epidemiological information to inform preparedness and response measures. DHA’s support included preparing the daily COVID-19 report that was released in the public domain. By improving the existing sub-system to fit the COVID-19 response, different interventions were implemented by DHA; one of the activities was organizing a one day orientation in Addis Ababa Regional Health Bureau for COVID-19 treatment facilities. Following the orientation, DHA was able to improve Dagu 2.0 to adapt and produce a customized report to assist in the distribution of personal protective equipment (PPE) and related products in response to the COVID-19 pandemic. In addition to this, a supply chain dashboard was also developed, which gives data visibility across the distribution center from major distributors of products (EPSA) to
service delivery point (EPHI and facilities). This enhanced visibility of stock levels and consumption and data flow from all EPSA branches, EPHI and facility centers found in Addis Ababa. The dashboard also includes a detailed report that aggregates information on different administrative units for monitoring purposes. The DHA team has also been providing a weekly COVID-19 data update to the USAID team.

4. Build capacity of health workers on operation and management of COVID-19 data systems

DHA supported implementation of COVID-19 surveillance and tracking systems at the national and regional levels. The following table shows a summary of current use of the different tools developed and implemented by MOH and EPHI with the support of DHA and DUP.

<table>
<thead>
<tr>
<th>System</th>
<th>Users</th>
<th>Number of users</th>
<th>Number of trained personnel</th>
<th>No of regions</th>
<th>Data count</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHIS2-based surveillance and tracking system</td>
<td>Rapid response teams, lab technicians, case managers, contact tracers, health administrators</td>
<td>1100</td>
<td>588</td>
<td>11</td>
<td>Lab tested cases: 625,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Admitted cases: &gt;800</td>
</tr>
<tr>
<td>Home-based isolation and care</td>
<td>Woreda coordinators</td>
<td>14</td>
<td>80</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health officers</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POE application</td>
<td>Bole International Airport</td>
<td>246</td>
<td>300</td>
<td>2</td>
<td>Callers: 109,424</td>
</tr>
<tr>
<td></td>
<td>Border users</td>
<td>52</td>
<td></td>
<td></td>
<td>Admitted: 861</td>
</tr>
<tr>
<td>Toll-free application</td>
<td>Call receivers</td>
<td>370</td>
<td>420</td>
<td>6</td>
<td>Rumors: 6,525</td>
</tr>
<tr>
<td></td>
<td>Toll-free coordinators</td>
<td>34</td>
<td></td>
<td></td>
<td>Health Info: 1,056,792</td>
</tr>
<tr>
<td>Health facility reporting app</td>
<td>Facilities</td>
<td>108</td>
<td>120</td>
<td>1</td>
<td>131</td>
</tr>
<tr>
<td>Community application</td>
<td>Public</td>
<td></td>
<td></td>
<td></td>
<td>110</td>
</tr>
</tbody>
</table>

5. Digital Health Support for COVID-19 Communication and Education

During this AY, DHA configured WhatsApp, Telegram, and text messaging to unstructured supplementary service data to provide citizens with correct information about the pandemic. These helplines support users on health queries or concerns and direct them to accurate information sources. The systems provide automated information responses with answers to the most frequently asked questions and relieved traffic to call center helplines that were overwhelmed. Some of the applications, like WhatsApp, use machine learning and natural language processing to enable automatic triage, helping to manage conversations at scale.
2. CROSS-CUTTING ISSUES

Gender

During this reporting year, DHA committed to identifying and addressing gender gaps with the objective of mainstreaming gender at all levels of the Activity. In the last quarter of the year, DHA hired a gender advisor, who will continue to translate the gender strategy into action and ensure that gender issues are integrated into the Activity’s strategic objectives, results framework, and annual work plans, and are routinely monitored.

As of September 30, 2020 DHA had 179 staff members (75% male, 25% female). As seen in the table below, the central office has relatively stronger gender parity (60% male, 40% female). We also have three women serving on the senior management team. In practice, the Activity is trying to include more women through affirmative action in recruitment of DHA staff and during the training the Activity conducts. However, few women are within the IT profession, and those we manage to get show little interest to advance to a leadership position.

DHA will develop a gender mainstreaming strategy to ensure gender equity within the Activity. Currently 27% of our technical staff are female and 19% of our administrative and support staff are female. It is worth noting that we have a significant number of drivers on the project, which make up the majority of our administrative and support staff, and this is a position almost always filled by male staff. As we implement more of the activities suggested in the gender analysis, we hope to continue to narrow the gap between male and female staffing in the regions and across all areas (Table 3).

Table 3: Distribution of Male and Female DHA Staff

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Central</td>
<td>40</td>
</tr>
<tr>
<td>Regions (areas)</td>
<td></td>
</tr>
<tr>
<td>Addis Ababa</td>
<td>1</td>
</tr>
<tr>
<td>SNPP</td>
<td>14</td>
</tr>
<tr>
<td>DireDawa</td>
<td>2</td>
</tr>
<tr>
<td>Somali</td>
<td>1</td>
</tr>
<tr>
<td>Harari</td>
<td>0</td>
</tr>
<tr>
<td>Tigray</td>
<td>8</td>
</tr>
<tr>
<td>Amhara</td>
<td>8</td>
</tr>
<tr>
<td>Oromia</td>
<td>19</td>
</tr>
<tr>
<td>Gambella</td>
<td>2</td>
</tr>
<tr>
<td>Afar</td>
<td>2</td>
</tr>
<tr>
<td>Benishagnul Gumuz</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
</tr>
</tbody>
</table>
The Activity is planning to produce gender-disaggregated data in the following Activity year. With regular monitoring of such data, DHA will ensure gender equity within the Activity.

**Youth**

DHA has been working to transition the DUP youth interns to SME through subgrant mechanisms. The major technical activity will be sub-granted to women-led youth groups to improve ICT Infrastructure and connectivity provided by HealthNet at health facilities. DHA prepared and conducted entrepreneurship readiness assessment to understand the interns’ knowledge, interests and skills to prepare a pool of candidates for subgranting. The assessment showed that all interns were capable, willing and ready to form and run SME. Virtual training was provided to 155 interns on the proposal development workshop on how to prepare a competitive proposal. A total of 18 enterprises applied for the proposal. Six enterprises won the bid in the first tranche, four of which were women led SMEs. At the end of AY1, the DHA team submitted youth grant supporting documentation for USAID/Ethiopia to consider for approval. If granted, the funds would be provided to youth organizations in AY2.

**Strategic information**

In this AY, the DHA prepared a Learning, Monitoring and Evaluation (LME) plan that was submitted to and approved by USAID. The LME plan is being used to guide the strategic information activities within DHA. Revision of the LME plan is scheduled in the first quarter of AY2.

The Strategic Information Director and the Knowledge Management, Communication and Gender Advisor positions were filled in the last quarter of the reporting year.

Different data collection tools were developed and shared with DHA staff. The tools were developed by adopting and revising MOH’s tools to align data elements and indicators that measure different aspects of the Activity. They were used during supportive supervision and assessment of connected woredas.

During the reporting year, data verification was done in different DHA connected woredas based on selected indicators such as skilled birth attendance (SBA), TB detection rate, malaria morbidity and DTP3/Penta3 Coverage. The feedback from the data verification was communicated to the sites for improvement.

The Activity regularly conducted data analysis, compiled quarterly reports and responded to different data requests from USAID.

**Program-related update**

Monitoring and evaluation tools were adopted and supervision checklists modified to collect baseline data about DHIS2, eCHIS, and HealthNet activities. Other major activities completed by DHA developers included the improvement of eCHIS software with the addition of malaria and MDR-TB screening features for health posts and health centers. DHA performed a data verification assessment on selected TB and malaria indicators at connected woredas, hospitals, health centers and health posts.
MDR-TB and TB

In the third quarter of AY1, DHA’s technical and senior leadership discussed with the USAID TB team the development of a roadmap for designing and implementing an MDR-TB electronic tracking tool. Subsequently, DHA developed and piloted MDR-TB tracking tool, which is a web-based management information system developed using the DHIS2 platform. The requirements gathering involved key users and stakeholders to map out MDR-TB program management workflows. This informed the development of the Tracker app and the subsequent deployment process (pilot and large-scale) based on software development life cycle principles. The approaches followed were as per the National MDR-TB paper tracking tool and the national guideline for tracking and treating MDR-TB patients. Then, the system was shown to experts from MOH and other important partners for their feedback.

Desk review of TB data from DHIS2 was done to check the data quality for a set of standard indicators that are routinely reported through facility information systems. The review quantifies problems with data completeness, timeliness, consistency and accuracy for possible recommendations to service improvement. This review showed, though report completeness and timeliness falls within MOH’s target (90%), there was regional variation across all data quality dimensions (Table 4).
Table 4: Summary Results-Interpretation for Consistency, EFY 2010–1012

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Interpretation</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB case detection rate contributed by community</td>
<td>Overall national ratio for this indicator was 0.99, which means TB case detection rate for the current year is 1% less than the mean for the past years. Except Afar and Gambella regions, which were outside the quality threshold, all regions had a ratio similar to the national ratio (within +/-33%)</td>
<td>Need to determine if this is a data quality or program issue.</td>
</tr>
<tr>
<td>Treatment Success Rate (TSR) among bacteriologically confirmed PTB cases</td>
<td>Overall national ratio for this indicator was 1.00, which means treatment success rate among bacteriologically confirmed PTB cases for the current year is equal to the mean for the past years. Harari and Tigray regions were outside the quality threshold from the national ratio (within 33% of the national ratio)</td>
<td>For data quality,</td>
</tr>
<tr>
<td>Treatment success rate of TB patients who received community-based treatment support</td>
<td>Overall national ratio for this indicator was 1.01, which means treatment success rate of TB patients who received community-based treatment support is greater by 1% compared to the mean for the past years. Harari and Tigray regions were outside the quality threshold from the national ratio (within 33% of the national ratio)</td>
<td>• Check if the selected TB data for these regions has been completely entered into the system.</td>
</tr>
<tr>
<td>Number of Drug resistance (DR) TB cases enrolled on MDR-TB treatment (Second line drugs)</td>
<td>Overall national ratio for this indicator was 1.42, which means the Number of Drug resistance (DR) TB cases enrolled on DR-TB treatment (Second line drugs) is greater by 42% to the mean for the past years. Harari and Sidama regions were outside the quality threshold from the national ratio (within 33% of the national ratio)</td>
<td>• If PMT at all levels is functional</td>
</tr>
<tr>
<td>Number of bacteriologically confirmed New Pulmonary TB cases detected</td>
<td>Overall national ratio for this indicator was 1.22, which means Number of bacteriologically confirmed New Pulmonary TB cases detected is greater by 22% than the mean for the past years. All regions were within the quality threshold from the national ratio (within 33% of the national ratio)</td>
<td>• See if previous data quality checks [LQAS, RDQA] have been done.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Data focused SS or mentoring has been done</td>
</tr>
</tbody>
</table>

**Malaria**

**LLIN mBrana**

During AY1, DHA supported the LLIN distribution campaign data capturing by rolling out a LLIN distribution tracking system in different regions and woredas. MOH with USAID support from the President’s Malaria Initiative (PMI) and the Global Health Supply Chain-Procurement Supply Management (GHSC PSM) planned to distribute 3,098,234 LLIN to 99 woredas in different regions in three rounds (around 1.5 million in round one; 700,000 in round two, and the remaining balance in round three). Overall, 84 woredas in four regions (36 woredas in Amhara in Q2, 14 and 20 woredas in Gambela and Benashangul Gumuz in Q3, respectively, and 15 woredas in Afar) captured the distribution data using the LLIN mBrana tracking system.

DHA leveraged the Vitas application at the EPSA central and hub warehouses and used mobile application and IVR for woredas and health posts. DHA supported this activity through
meetings with PMI and GHSC PSM. Training was provided for regional malaria coordinators, regional malaria focal persons and RHB deputy heads. A total of 140 individuals participated in the training on capturing LLIN distribution on mBrana. In the third quarter of the year, 105 individuals were trained from Gilgel Beles, Bamaiko, and Gambella. In the last quarter of the year, 35 individuals were trained on the mBrana LLIN campaign tracking tool to capture distribution of LLIN with the IVR system. Furthermore, about 49 mobile phones were distributed to the woredas in this activity year; on-the-job support was provided; and dashboard access was given to regional malaria coordinators, and some woreda malaria focal persons (Figure 14).

Figure 14: LLIN Distribution in mBrana Dashboard

Key lessons

Digitization

- Being flexible and adaptable to change helped the digitization team achieve great results while working remotely due to COVID-19.

- Introduction of Agile Methodologies and processes such as daily standup meetings reduced the communication gap that could have occurred when the team went remote.

- Clearly defined support procedures between the client and the DHA team help reduce time spent resolving support issues.

Data Use

- There is a huge demand for data at all levels of the health system. The current level of aggregation and disaggregation of the indicators signals that data quality should be addressed first at the system level, followed by capacity building.

- Implementation of connected woredas at service delivery points is very challenging due to COVID-19, but promising if the PRT is fully supported.
• One of the main lessons from COVID-19 evidence generation is the demand for data triangulation. While performing COVID-19 analytics, data is received through several sources and bringing all into one platform was essential for the weekly COVID-19 meetings. An example is monitoring of essential service uptake from the national HMIS data during COVID-19. This includes triangulating key indicators with COVID-19 (dashboards from lab tests, travelers, toll free, quarantine centers, rumors, etc.), availability of supplies, among others. DHA has learned that a common platform for easy access to evidence is mandatory for decision makers.

**Capacity building**

- Building the capacity of HITs is critical to achieve the Ministry HIS goals and attain USAID’s Journey to Self-Reliance. Support to HSCs to equip HITs, HEWs, pharmacy technicians, and other last-mile providers with skills must continue.

- Blended learning offers flexibility in terms of availability. It will enable trainees to access the materials from anywhere at any time while also enjoying the benefits of face-to-face support and instruction.

- Universities have an important role in providing capacity-building support to HSCs. It is important to strategically link universities with its satellite HSCs.

**Governance**

- Working in collaboration with the Ministry and engaging DUP and RHB is essential.

- Establishing a clear communication plan with MOH team is important at all levels.

**Implementation**

- Data quality verification assessments are important to measure the overall quality of routine health data. This is the case in all health areas where essential data are gathered for monitoring interventions using selected program indicators.

- DHIS2 was not used to its full potential to support decision-making for program planning. Therefore, capacity building for HIT and HMIS focal persons should be a mandatory activity.

- Joint supportive supervision with government partners had an encouraging impact.

- Strengthening of performance review teams at all levels is the key for data quality assurance.
<table>
<thead>
<tr>
<th>Objective</th>
<th>Challenge</th>
<th>Solution</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sub-OB 1.1.2</strong>&lt;br&gt;<strong>EMR - Orbit Health implementation</strong></td>
<td>• Shortage of human resources, political instability&lt;br&gt;• Inability to hire a full-time network engineer and interoperability expert in short time&lt;br&gt;• Lack of laptops, continuous department relocation at deployment facility&lt;br&gt;• The COVID-19 pandemic&lt;br&gt;• Delays in IT infrastructure procurement in Tirunesh Beijing hospital.&lt;br&gt;• Brief civil unrest that occurred in Addis Ababa</td>
<td>• Hiring consultants&lt;br&gt;• Using personal equipment&lt;br&gt;• Working closely with health care facility IT staff with departmental relocation adoption&lt;br&gt;• Providing COVID-19 infection prevention training to staff&lt;br&gt;• Working multiple tasks in parallel and; &lt;br&gt;• Schedule temporary home-based working methods during the civil unrest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delay in legalization process</td>
<td>Communicate regional bureaus through JCC federal office</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unable to give required training for interns</td>
<td>Explore other training providers and such stakeholders to leverage resource</td>
<td></td>
</tr>
<tr>
<td><strong>Grant Management</strong></td>
<td>Delay in approving NXP procurement request (Orbit Health and JSI)</td>
<td>Continued follow up with USAID and agree on steps to complete (sub-) activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unable to get timely direction from USAID</td>
<td>Continued follow up with USAID and agree on steps to complete (sub-) activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delays due to COVID-19 and political instability (pre-award assessment and sign award agreement)</td>
<td>Develop a remote work habit and virtual workspace by making sure everyone has the necessary materials, like connectivity, and use different monitoring mechanisms.</td>
<td></td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>• Turnover of trained staff at health facilities&lt;br&gt;• Power outage in most regional health facilities&lt;br&gt;• Poor infrastructure and network availability was the major issue during the site visits.&lt;br&gt;• Gaps in human resource capacity within the system leading to improper utilization of HIS formats.&lt;br&gt;• A security issue in some parts of the country has created some problems with our FOs travel.</td>
<td>• Provide on the job training for more than one staff at health facility and work as a focal person to provide support to the health facilities.&lt;br&gt;• Ensure that health facilities with power shortages get uninterruptible power supply and more reliable power supply&lt;br&gt;• Provide on-the-job training based on the observed gap.&lt;br&gt;• Support health facility through phone and virtually.</td>
<td></td>
</tr>
</tbody>
</table>
Risk management

DHA risk management is an ongoing process that continues through the life of the Activity. Many of these processes were updated throughout the year as new risks can be identified at any time. Risk management helped to decrease the probability and impact of risk adverse to the Activity (Table 6).

Risk Probability and Impact Matrix

Table 6: Risk Probability and Impact Matrix

<table>
<thead>
<tr>
<th>Probability</th>
<th>Trivial</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Moderate</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Likely</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Very likely</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

In the reporting year, risks for DHA were managed and monitored at regular intervals. All identified risks were evaluated to determine how they affect the overall activity, and deliverables. DHA’s chief of party (COP), with the assistance of the project team, determined the best way to respond to each risk to ensure compliance with the constraints. DHA has been monitoring the COVID-19 situation and making adjustments accordingly in consultation with USAID, MOH and RHBs. MOH focused on containing the spread of the virus through appropriate surveillance and pandemic management. Thus, DHA has been providing technical support for the development of the Ethiopian COVID-19 Surveillance Platform (ECSP). The MOH and RHBs are also expecting DHA field officers to support RHBs and respective clusters in cascading all emergency response project components as applicable:
### Table 7: DHA Risk Response-AY2020

<table>
<thead>
<tr>
<th>#</th>
<th>Objective#/Sub-objective#/Activity#/Sub-Activity(#)</th>
<th>Risk</th>
<th>Mitigation response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Support Information Technology Systems, IT infrastructure and Data Repository (Digitization)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Support development, operation, and maintenance of various existing health information systems</td>
<td>In addition to the spread of COVID-19; Political instability, communications and power shortages affected some places of the country</td>
<td>In response to COVID-19; Surveillance and tracking system development and implementation were performed following the work from home policy. The HIS subsystems performed requirement analysis and developed workflows. Customization, manual development and virtual training were major responses.</td>
</tr>
<tr>
<td>1.2</td>
<td>Track and trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Data management services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Support to improve ICT infrastructure and connectivity at health facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Improvement in Integrated Health Information Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Objective 2: Build a Culture of Data Use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Roll out gender balanced data use strategies and ensure data quality</td>
<td>COVID-19, Significantly affect implementation timeline of DHA work plan</td>
<td>Most communications from central to regional health bureaus were made virtually but also limited physical discussions took place with maximum protection against COVID-19. DHA, through area managers, participated in review meetings with limited participants at convenient sites.</td>
</tr>
<tr>
<td>2.2</td>
<td>Supporting implementation of the connected woreda program at 100 woredas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Supporting creation of twenty three (18) IR model Hospitals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>Data Analytics Platforms and Capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Objective 3: Capacity Building and Governance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>HIS Governance Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Support Ministry of Health Innovation Lab</td>
<td>Delayed universities’ engagement on capacity building and DHA implementations as COE.</td>
<td>Online communication was used to share draft policies, guidelines and other governance documents developed to TWGs from HITD, PPMED and other directorates. Multiple in-service and some pre-service training were cancelled and subsystems for blended learning approaches were identified and developed.</td>
</tr>
<tr>
<td>3.3</td>
<td>Building capacity of HSCs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cross cutting: Quality Assurance &amp; System Strengthening</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Data/service quality verification</td>
<td>Political instability and movement restrictions</td>
<td>Desk review of activities and verification at site level (Hospital, health center and Health post) were conducted based on the technical and security advice from RHBs.</td>
</tr>
<tr>
<td>4.2</td>
<td>Quality improvement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GRANTS

DHA has been conducting foundation work on grant management activity that can significantly contribute to achieve DHA's objective by aligning with local youth grants, subcontractors, local university grants and local tech companies.

1.1. Grant for Interns/Local youth Grant

According to the MOH, the HIS in most health facilities was not functional. The reasons included lack of skilled staff who can handle simple hardware maintenance; and inability to do troubleshooting, systems upgrading and testing of LAN functionality. In order to overcome these problems, DUP with the support of Bill & Melinda Gates Foundation launched an internship program for newly graduated university health informatics and ICT technicians. The nine-month internship program included on job practical training at the HealthNet facilities. Overall, 155 interns were assigned in all regional and zonal facilities and two city administrations for practical attachment. During the reporting year, DHA has been working to transition the DUP interns to small and micro enterprises (SME) through subcontract mechanism.

During the AY, DHA prepared and conducted entrepreneurship readiness assessment to understand the knowledge, interests and skills of the interns to prepare a pool of candidates for subgranting. The result of the assessment showed that all interns were capable, willing and ready to form and run SMEs. To help the interns win the grant; establish an enterprise group; and fulfill the legal requirement to be an entrepreneur, DHA provided virtual training to 155 interns on the application process and preparation of competitive proposals.

To support the legalization, the federal JCC and DHA worked with all regional JCC and SME bureaus. Several discussions were held with the regional JCC bureaus to create a smooth relationship and facilitate the legalization. As a result, Amhara, Somali, and Tigray RHBS understood the existing opportunity for the youth groups and facilitated the legal process.

Then, DHA prepared and issued a request for proposal (RFP no. 20DHA-002) on September 9, 2020 to invite all interns to apply for a proposal on technical services on HIT for health facilities with HealthNet and other required IT services.

Before the end date of the proposal submission, a question and answer session was held to clarify questions and address challenges of interns during the proposal development. Eighteen enterprises submitted technical and financial proposals on time. Two proposals were rejected because of late submission. During this process, 137 interns participated in the proposal development whereas 18 interns did not show interest in the process. Six SMEs won the bid in the first tranche. Of the six winners, four were women-led. DHA is planning to provide seed money following USAID's approval.

In AY2, DHA plans to provide similar grants for the other youth groups with the next funding tranche. To make the SMEs successful and sustainable, DHA has been working to get business development support. According to the result of JCC’s study, most new enterprises discontinue the business if they do not receive ongoing
business mentoring and coaching. Hence, DHA has been working closely with different stakeholders to leverage resources to help the new enterprises get technical training, business development skills and market linkages. When successful enterprises emerge and flourish, they enhance the quality of the HIT within the health system and contribute to achieving the 10-year IRR. The youth grant also helps reduce unemployment and poverty among the youth population in the country.

1.2. Grant for local universities

Jimma and Mekelle Universities were selected to work on eCHIS and EMR respectively with non-competitive award schemes.

Based on the result of a pre-award assessment, a decision was made to award the grants to both Mekelle and Jimma University. The project proposals from both universities were reviewed and were submitted to USAID for approval. The agreement will be signed as soon as DHA secures approval from USAID.

Following a pre-award assessment, Mekelle University developed a project proposal with all components as per an agreed scope of work. The proposal was reviewed and then submitted to USAID for approval. Passing the visual compliance requirement, the University has entered into a fixed award agreement. One local tech company is required to work with Mekelle University to implement the EMR system in all facilities. Unlike the universities, this local tech company has not been listed in the approved work plan and needs to pass through the evaluation process to win the bid. Currently, an expression of interest has been advertised on the Reporter Newsletter and Mekelle University’s website.
# Annex A. Activity Performance indicator

<table>
<thead>
<tr>
<th>Performance indicator</th>
<th>AY1 Target</th>
<th>Total achievement</th>
<th>% Achievement</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Indicators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of persons trained</td>
<td>3,700</td>
<td>5,224</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>Data use</td>
<td>200</td>
<td>20</td>
<td>10</td>
<td>This activity is integrated with MOH training and postponed to AY 2.</td>
</tr>
<tr>
<td>PHEM data entry</td>
<td>500</td>
<td>2,458</td>
<td>492</td>
<td>Due to COVID Response, many trainings provided to data collectors on COVID-19 surveillance tracking system</td>
</tr>
<tr>
<td>IT end user support</td>
<td>3,000</td>
<td>2,746</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td># of health posts where eCHIS is implemented</td>
<td>275</td>
<td>0</td>
<td>0</td>
<td>eCHIS deployment was done in 11 woredas (280 health posts). However, implementation did not start.</td>
</tr>
<tr>
<td>Number of woredas using LLIN tracking tool to record distribution out of the target-ed woredas</td>
<td>72</td>
<td>85</td>
<td>118</td>
<td>The first plan change from SNNP Region to B.Gumuz &amp; Gambella</td>
</tr>
<tr>
<td>Number of products with GS1 GTIN and sGTIN data shared by manufacturers</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Manufacturer has yet to send their product list</td>
</tr>
<tr>
<td>% of HCs with HealthNet that have access to HIT support</td>
<td>5</td>
<td>11</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Number of top performance team built on the innovation lab</td>
<td>1</td>
<td>2</td>
<td>200</td>
<td>1 top performance team was considered from university students but due to COVID-19 universities are closed and we were unable to get them on board so instead the activity deployed two teams working on eCHIS and HRIS to work from the innovation lab.</td>
</tr>
<tr>
<td>Number of e-Learning draft modules developed (by sub-system)</td>
<td>2</td>
<td>2</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td><strong>Custom Indicator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of facilities (health center &amp; health post) reporting on time using DHIS2</td>
<td>70</td>
<td>63</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Health center</td>
<td>70</td>
<td>67</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Health post</td>
<td>70</td>
<td>62</td>
<td>89</td>
<td>Due to internet ban in various regions</td>
</tr>
<tr>
<td>% of SDPs (health center &amp; health post) submitting a complete reports on DHIS2</td>
<td>90</td>
<td>79</td>
<td>88</td>
<td>Due to internet ban in various regions</td>
</tr>
<tr>
<td>Health center</td>
<td>90</td>
<td>85</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Health post</td>
<td>90</td>
<td>77</td>
<td>86</td>
<td>Due to internet ban in various regions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td># of institutions (health centers, hospitals) re-connected to HealthNet</td>
<td>500</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Health center</td>
<td>480</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Due to MOH’s failure to provide HealthNet service number for facilities whose VPN subscription was discontinued from EthioTelecom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of woredas/health centers with an active performance review team</td>
<td>50</td>
<td>66</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Woreda health office</td>
<td>50</td>
<td>53</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Health center</td>
<td>50</td>
<td>69</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Ideally, all visited sites should have an active performance review team. (Active means it has conducted a review meeting at least five times in the last six months. However, we started from a low target with the different level of uncertainty we have. Active performance review is defined as having a monthly regular meeting. However, in the standard tool the reference period is the last six month and did not address monthly target. If we modify to a monthly base, the result may be lower, which is one of the challenge in the tool.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of individual eHIS sub-systems dashboard users</td>
<td>440</td>
<td>326</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Fanos Dashboard</td>
<td>120</td>
<td>97</td>
<td>80.8</td>
<td></td>
</tr>
<tr>
<td>eCHIS Dashboard</td>
<td>20</td>
<td>29</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>eRIS dashboard</td>
<td>300</td>
<td>200</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>Due to internet ban in various regions, unable to access the dashboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due to internet ban in various regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zonal level new users were added from the Oromia region.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due to COVID some activities postponed to AYII</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of newly developed standards and policies on data governance (e.g., strategies, policies, etc.)</td>
<td>3</td>
<td>3</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
### Annex B. Activity Key Achievement

<table>
<thead>
<tr>
<th>Activity Objective/Sub-objective &amp; Indicator</th>
<th>Target</th>
<th>Achievement</th>
<th>% achievement</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1: Support Information Technology Systems and Data Repository</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Objective 1.1: Support Development, Operation, and Maintenance of various existing Health Information Systems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity 1.1.1. eCHIS: Collaborative iteration by DHA and the FMOH innovation lab for a high-quality product and implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of woreda where eCHIS deployed</td>
<td>11</td>
<td>11</td>
<td>100</td>
<td>eCHIS deployed in 11 woredas (275 health posts) implementation didn’t start yet</td>
</tr>
<tr>
<td>eCHIS capacity building for HEWs</td>
<td>800</td>
<td>963</td>
<td>120</td>
<td>More than one HEW participated in the training from each health post</td>
</tr>
<tr>
<td><strong>Activity 1.1.2. EMR &amp; Electronic Hospital Card: Support planning, co-creating and selecting the right EMR solution for Ethiopia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of hospitals assessed for EMR deployment</td>
<td>3</td>
<td>3</td>
<td>100</td>
<td>at Girum, Alert &amp; Tirunesh Beijing Hospital made the assessment and Tirunesh Ho select for pilot implementation</td>
</tr>
<tr>
<td><strong>Activity 1.1.3. HMIS: Optimizing the system and build capacity at national scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Health professionals trained on DHIS2</td>
<td>360</td>
<td>1104</td>
<td>307</td>
<td>As part of the SS OJT provided to the health professional</td>
</tr>
<tr>
<td># DHIS2 implemented Health Facility, Woreda received supportive supervision support</td>
<td>3000</td>
<td>3078</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td><strong>Activity 1.1.4. HRIS: Support planning, co-creating and selecting the right HRIS solution for Ethiopia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics Roadmap developed for HRM</td>
<td>1</td>
<td>1</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Objective 1.2: Strengthening Supply Chain and Regulatory Information Systems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Activity 1.2.1. Ethiopian Pharmaceutical Supplies Agency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-activity 1.2.1. eLMIS-EPSA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of Vitas issues that end users experienced where resolved</td>
<td>90%</td>
<td>99.4%</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td># EPSA Central and Hubs fully using Vitas for warehouse and logistics management</td>
<td>19</td>
<td>19</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td># Vitas user received refresher training</td>
<td>100</td>
<td>105</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td># of Woredas using LLIN tracking tool to record distribution out of the targeted woredas</td>
<td>72</td>
<td>85</td>
<td>118</td>
<td>Plan target change from SNNP Region to Gambella &amp; B/Gumuz region</td>
</tr>
<tr>
<td><strong>Sub Activity 1.2. eLIMS facility store and dispensary level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Health Facilities implemented Dagu 2.0</td>
<td>100</td>
<td>126</td>
<td>126%</td>
<td>Activities implemented as part of SS and can reach more than planned HF</td>
</tr>
<tr>
<td>% Dagu issues resolved through the support system</td>
<td>80%</td>
<td>89%</td>
<td>111%</td>
<td>Able to resolve issue within a week from the time of the call (% of total reported)</td>
</tr>
<tr>
<td># of Health Facilities received support through SS visit</td>
<td>200</td>
<td>533</td>
<td>267%</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td><strong>Activity 1.2.2. Ethiopian Food and Drug Authority</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub Activity 1.2.2.1. eRIS Federal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># EFDA branches using i-License</td>
<td>6</td>
<td>6</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Objective 1.3: Data Analytics Platforms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average number of monthly Fanos Dashboard Users</td>
<td>120</td>
<td>97</td>
<td>81%</td>
<td></td>
</tr>
<tr>
<td>Based on issue reported from the health facility and to upgrade Dagu 2.0 Version</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of monthly eCHIS dashboard users</td>
<td>20</td>
<td>29</td>
<td>143%</td>
<td></td>
</tr>
<tr>
<td>Due to data collection gap in Q2 during migration from Google analytics platform to Firebase, due to the reduction in the number of staff at EPSA due to COVID-19 in Q3 and Q4 and due to internet ban in various regions in Q4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of monthly eRIS dashboard users</td>
<td>300</td>
<td>200</td>
<td>67%</td>
<td></td>
</tr>
<tr>
<td>Due to internet ban</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Objective 1.5: Support to Improve ICT Infrastructure and Connectivity at Health Facilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT infrastructure management and operation document SOP developed</td>
<td>Complete</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-Objective 1.6: Improvement in Integrated Health Information Systems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of system delivery app developed for MOH support</td>
<td>3</td>
<td>2</td>
<td>67%</td>
<td></td>
</tr>
<tr>
<td>Clinical &amp; Family Health Guideline App Developed, MOH didn’t request for Blood Bank app for this year.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective 2: Build a Culture of Data Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-objective 2.1: Roll out gender balanced data use strategies and ensure data quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop data use framework</td>
<td>framework develop</td>
<td>Complete</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Dashboard developed for data analytics and use</td>
<td>Develop dashboard</td>
<td>Complete</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Five dashboards developed and shared for key decision makers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-objective 2.2: Supporting implementation of the connected woreda program at 20 woredas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Connected Woreda Supported for connected Woreda implementation</td>
<td>20</td>
<td>19</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>% of woredas/facilities with an active Performance (Management) Review Team</td>
<td>50</td>
<td>66</td>
<td>132%</td>
<td></td>
</tr>
<tr>
<td>Ideally, all visited sites (100%) should have an active performance review team. Due to data gaps, DHA targeted a modest target (50%). Active PMT is defined mainly using regular monthly meeting. The national tool use a reference period of last six months and assess if there is at least five meetings and didn’t take in to account the content of the meetings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sub-objective 2.3: Supporting creation of ten (10) IR model Hospitals

| # of IR hospital Receive Support | 10 | 8 | 80% | Two hospitals are replaced due to COVID-19. |

Sub-objective 2.4: Building Capacity of Health Science Colleges

| # of e-Learning modules developed (by sub-system) | 2 | 2 | 100% |

Develop HiTs Occupational Standard

| HIT OS developed | Complete | 100% | Approved by the MOH and TVET |

Objective 3: Capacity Building and Governance

| # of Newly developed policies on data collection reporting, sharing | 3 | 3 | 100% | 1 top performance team was considered from university students but due to COVID-19 universities are closed and we were unable to get them onboard so instead the activity deployed two teams working on eCHIS and HRIS to work from the innovation lab. |

| Number of top performance teams built in innovation lab | 1 | 2 | 200% |

Annex C. AY I Activity Matrix

Activity monitoring is one of the learning, evaluation, and monitoring activities. This includes tracking of the status through Likert scales (complete, incomplete, partially complete and postponed). A total of 158 activities organized by objectives and sub-objectives were planned for AY1. Overall, DHA monitored activities with quality deliverables timely. The table in the link describes the performance of activity monitoring. Very few activities were postponed or partially completed due to COVID-19 and security concerns.
Annex D. Success Stories

Going the Extra Mile: The Case of Michael Health Center

During our regular supportive supervision, one of our data use field officers visited Michael Health Center. Although the health center had a dedicated computer, it did not have the proper technology setup. No staff, including the health center director, had received training on DHIS2, the software used at health centers and hospitals for data capturing, storing, transmitting, and analyzing. The computer produced incorrect results, which the director perceived as software malfunction.

The director hired a local IT professional to solve the problem. Coincidentally, just a few hours after the director had arranged for the consultant, our DHA field officer arrived at the health center. After being briefed about the issue, the field officer repaired the computer and installed DHIS2 offline version 2.30, and provided detailed on-the-job training to the team so they could start using it - which also saved them the expense of paying a consultant. Subsequent monitoring visits at the health center showed improvements in quality of reports.

In gratitude, the director said, “The support you provided me was crucial, and one that I had not received so far. Through it, I was able to use DHIS2, which improved my health center’s report timeliness and completeness. Additionally, the support has saved the health center from extra costs of computer troubleshooting. Thank you and keep up your good work.”

Transforming customer service, saving staff time: the case of Wada health center

“I am very happy to be able to serve my clients with better customer service, with speed and in an organized manner,” said Bereket Anteneh, an HIT professional. Mr. Bereket is one of the many HIT’s who benefitted from the supportive supervision conducted by DHA. During the supervision, the Activity staff identified the health center where Bereket had a medical catalogue system failure. The computer at the health center usually failed to function properly, so Mr. Bereket and his colleagues resorted to using manual registration. This incurred them additional cost, staff time, and longer client waiting time.

Cognizant of the problem, DHA field officers intervened and maintained the system at the facility during one of the supervisions. They re-installed the application and conducted proper troubleshooting. This allowed the system to start working properly. They also provided on-the-job training to Mr. Bereket to do similar troubleshooting in the future.

After this fix, the health center staff witnessed great improvement, including:

- resuming live registration of client information;
- avoiding duplicate client cards;
- proper filing of client cards;
- faster client information retrieval and clearance of backlog as live registration resumed.
Overall, waiting time and unnecessary effort were significantly reduced. Mr. Bereket remarks: “My work does not exhaust me anymore.”

Similarly, DHA has provided supportive supervision and on the job training to HIT staff for more than 700 health facilities in the first Activity year.

Bereket using the revitalized/maintained computer and system at the health center’s card room (Photo: Belachew Kebede, DHA field data use officer. 9/10/2020.)

**Dagu 2.0: Revolutionary digital innovation brings remarkable change to hospitals**

Mr. Shushay has been head of the pharmacy unit at the Ayder Comprehensive Referral Hospital for about three years. Having ten years of experience in various positions, Mr. Shusay knows the details of his work. He has seen the highs and lows of the hospital’s performance. Ayder is the only comprehensive referral hospital in the Tigray region providing services to hundreds of thousands of people, including beyond the region in Afar and parts of Amhara. As a result, the hospital has significant budget, client volume and daily dispensing of drugs.

To handle the huge volume of transactions, Dagu 1.0 software was introduced to improve the record keeping at the hospital. Dagu is a revolutionary and cost effective digital system which helps to efficiently manage daily commodity transactions at facility level. DHA upgraded the system to Dagu 2.0 and Ayder Hospital, along with over 15 Hospitals in Tigray, are using the system. However, because of the skills gap, staff workload, and lack of a clear process for all dispensing units, the hospital was not able to use all the reports of the automation, and so they resorted back to using Dagu 1.0.

Recognizing this challenge, DHA coordinated with the hospital pharmacy staff to upgrade their Dagu system. The Activity provided training, mentoring and continuous technical assistance through supervision. As a result of this support, all pharmaceutical operations – inventory control, logistic management, scheduling and reporting systems – improved. Now, the hospital can request their supply of products online from the Ethiopian Pharmaceutical Supply Agency (EPSA) hub.

Mr. Shushay said: “Previously, it was difficult to know the stock status of all items in the hospital. It was tough to monitor people getting essential medicines and other supplies in the hospital. We were dependent on the quarterly updates of the manual logistics management information system (LMIS) from the store managers to determine whether essential medicines were well-stocked or experiencing shortages, regardless of their quality.”

With the relaunching of Dagu 2.0 in the last six months, Shushay’s frustration in the use of data from the manual LMIS has subsided. The effective use of Dagu 2.0 has helped him produce better, faster and more accurate reporting of supply chain data, which he uses to make health decisions to prevent stock out of the health commodities.
Dagu 2.0 simplifies the logistics supply by reducing the time taken to get drugs from the pharmaceutical supply agency hub through online submission of electronic RRF (report and requisition formats). Mr. Shushay adds: “Dagu 2.0 is a milestone software which has simplified the life of our pharmacy and logistics staff. It is a quality software program that enables our hospital to see all the very important reports.”

Currently, Dagu 2.0 has been installed in 126 health facilities through DHA support. A total of 130 staff have been trained to use the system through OJT.

**Ethiopia’s Digital Health Response to Combat COVID-19**

Mr. Mesoud Mohammed Ahmed finds himself at the heart of the national COVID-19 response in Ethiopia. As the COVID-19 Emergency Operation Center Digitization lead, Mr. Mesoud explained: “When this pandemic hit, there was an immediate need to look within the Ministry of Health (MOH) to identify the best way to respond.”

The pandemic is causing huge stress in health care systems globally including Ethiopia. Since reporting the first COVID-19 case on March 13, 2020, the Ethiopian Public Health Institute (EPHI), one of the technical Agencies under the MOH, has been taking steps to contain the pandemic before it causes significant damage to the community. The driving force behind this effort is digitization of the response to the pandemic.

It is evident that the pandemic response needs reliable information and it raised the question about how data can be collected in a more effective and efficient manner. Aware of the need for a rapid response to contain the pandemic, DHA partnered with MOH/EPHI in the digitization effort.

Over the past six months, DHA has accomplished tremendous work. During the initial response of the pandemic, the laboratory work process was not integrated with any system, which meant that laboratory data was subject to loss, duplication, and inaccuracy. That, coupled with the increasing demand to collect, analyze, and disseminate information, necessitated a more streamlined and effective method of working. With MOH/EPHI taking the lead, DHA developed nine applications to streamline data collection, enhance administrative tasks and improve the overall productivity for better surveillance, logistics and case management.

Mr. Mesoud proudly displays his visuals to demonstrate the live COVID-19 data he is receiving. He disseminates the information to the public and uses it to inform decisions.
DHA’s immediate response included providing hands-on technical and on-the-job support to the MOH/EPHI. With activities ranging from developing the application, providing training to end users, monitoring and supportive supervision, MOH/EPHI is now able to accomplish a lot in improving data quality, and reducing data loss, duplication and overall streamlining of the laboratory information system to feed into DHIS2. Much progress has been observed in turn-around time and usage of scarce resources which has consequently improved overall patient care.

“Mr. Mesoud says,
It’s a government-led and driven information system, but frankly, without DHA’s support, it would have been difficult to realize it,”
Annex E: Activities Postponed to AYII

In AYI One of the challenges was the inability to implement the planned activities due to the COVID-19 pandemic. The activities listed below are postponed to AYII in discussion with DHA stakeholders and up on approval by USAID.

Objective 1: Support Information Technology Systems and Data Repository

Sub-Objective 1.1: Support Development, Operation, and Maintenance of various existing Health Information Systems

- **eCHIS**
  - Pilot (long-lasting insecticide-treated net) LLIN distribution tracking through the eCHIS in Malaria High Load Woreda
  - Study tour to India for learning from ICDS-CAS Program

- **EMR & Electronic Hospital Card**
  - Sharing the lessons learned to the national foundational ID initiative

- **HRIS**
  - Use of the helpdesk and supportive supervision to provide timely user support for all HRIS deployments

Sub-Objective 1.2: Strengthening Supply Chain and Regulatory Information Systems

- **eLMIS-EPSA**
  - Work on integration of the current system to new system as part of transition

- **eLMIS Facility store and dispensary level**
  - Begin to implement dispensary level APTS standards

- **mBrana facility**
  - Continue to provide development support to mBrana to mature newly added features
  - Scale up Dagu system to 100 priority health centers
  - Support the timely stock and resupply requests of vaccines
  - Iterate on user feedback to add functionality to mBrana
  - Provide training on troubleshooting and user support via HITs. DHA will not provide direct end-user support
  - Using the helpdesk and supportive supervision, provide timely user support for all mBrana deployments

- **eRIS Federal**
  - Support the development of the port clearance, inspection module & iVerify mobile public app in eRIS

- **eRIS Regional**
  - Implement i-License in two regions at EFDA woreda level offices to register all public and private facilities

- **Adopt i-Register system (for the available regions) and make it a condition to issues based on list generated from i-register system**
• Train woreda level users on usage of the system with day to day end user support provided by the woreda
• iLicense data to be synced with MFR
• Support and maintain the application to be used as a model to scale to other regions
• Using the helpdesk and supportive supervision, provide timely user support for all iLicense deployments

**Sub-Objective 1.4: Data Management Services**

- Support landscape assessment to assess existing and potential platforms for the data warehouse
- Support the finalization of data warehouse acquisition strategy and begin implementation process
- Support the development, documentation, and dissemination of clear data management procedures
- Support the development of data warehouse implementation roadmap

**Sub-Objective 1.3: Data Analytics Platforms**

- Integrating data points from other systems for triangulated routine reporting

**Track and Trace**

- Support the development, dissemination and sensitization of stakeholders on the implementation of Traceability Directive and GS1 standards
- Link Master Product Registry with eRIS iRegister
- Link GS1 GLN with Master Facility List
- Create central traceability database based on EPCIS standards by capturing events from eRIS, Vitas and Dagu
- Engage stakeholders such as EFDA and EPSA, to make sure this master product data is integrated in their respective HIS systems and used as the single source of truth for all product related transactions

**Sub-Objective 1.6: Improvement in Integrated Health Information Systems**

- Support finalization of the national eHealth Architecture and its implementation roadmap
- Support customization and implementation of Open HIM as interoperability layer service
- Support the transition of hosting of NHDD to MOH cloud
- Support data exchange between Vitas and MFR to electronically send facility list, which will be used to only issue registered facilities to fight fraud.
- Implement standard data exchange between ilimport and Vitas
• Study Tour to one country to review the Health Information Mediator

**Sub-objective 2.2: Supporting implementation of the connected woreda program at 20 woredas**

• Support integrated training on data quality and information use

**Sub-objective 3.2: Support Ministry of Health Innovation Lab**

• Use the innovation lab to build comprehensive technology team based on modern system development practice/standards

• Facilitate and conduct capacity building session at the Innovation lab (such as inviting speakers, organizing hackathon, etc.)

• Provide internship opportunity for current or recent graduates to help build new and upcoming talent by coordinating with universities

• Coordinate and promote the innovation lab to be a recognized tech hub by various development partners
Annex F. Highlight on proposed activities of AY2

The DHA will work with the MOH, its agencies, and RHBs to achieve transformational impact toward a sustainable and resilient electronic HIS in Ethiopia through:

- Supporting information technology systems and data repository at all levels
- Building a culture of data use at all levels within the health sector and,
- Supporting capacity building and governance efforts of the MOH for all HIS

DHA has planned to implement the following activities in Year-2 to achieve the above goals and objectives.

**Objective 1: Support Information Technology Systems, IT infrastructure and Data Repository**

- Complete the development of the agrarian version of eCHIS, implement eCHIS in 50 additional woredas; customize selected eCHIS modules (family folder) for urban settings; enhance the health center and focal person application; major platform enhancements to ensure readiness for current and future scale including strengthening DHIS2 integration capabilities; develop dashboards built on top of CommcareHQ for different levels of users for the data integration and business analytic between eCHIS and DHIS 2; and develop mobile reports for all the completed eCHIS modules (Demographic report; Service coverage report; disease report; HMIS reports and CHIS reports).
- DHA will conduct national assessment on implementation of EMR, compare and analyze performance and document lessons to be used for national EMR standard, and also deploy EMR in three learning hospitals through youth grant mechanism and engaging private partner
- DHA will work towards optimizing the current deployment and implementation of DHIS2; re-design the PHEM module of DHIS2 to improve facility level PHEM reporting and analysis; conduct DHIS2 analytics and information use training session for decision makers at zonal, woreda, and health facility levels in DHA sites; and develop, implement and test a case-based surveillance system for TB and Malaria using DHIS2 tracker. DHA will also develop strategies for improving disease reporting and reporting rates of private health facilities.
- Complete the development of the human resource administration, development, and licensure modules and deploy human resource administration modules at the MOH and its agencies (EPSA, EFDA, EPHI, Blood bank and CBHI) and support the electronic migration of legacy data as available; Implement i-license for HR licensure at the MOH and 1 regional health bureau, and implement of the HR development module at the MOH
• Support EPSA in upgrading and improving the functionality of LMIS including expanding functionality of Vitas to support GS1 enabled tracking; support the FANOS programmatic dashboard; upgrade Dagu 2.0 at 500 facilities; develop and mature mBrana health facility app for last mile vaccine visibility and deployment at 100 high load (EPI service) health centers.

• Upgrade eRIS to reflect revised business process of registration and add additional priority modules and implement i-License (Health facilities) in 100 woreda level offices to register all public and private facilities.

• Develop eHealth architecture roadmap using HIS maturity model, create eHA and interoperability center of excellence at Mekelle university; demonstrate the maturity process of EMR by working with a private IT firm; and develop and mature MFR as a shared service.

• Establish a national digital health Helpdesk at the innovation lab; enhance HealthNet system uptime status to 80% in 100 Woredas and health facilities through maintenance support.

Objective 2: Build a Culture of Data Use

• Support national and regional level data quality and information use improvement activities such as data quality and feedback loop to the lower level; support the national health indicators revision; conduct routine data quality assessments; support annual review meetings; supportive supervision; trainings, and review meetings.

• Implement the connected woreda program at 100 woredas to make the facilities and the woreda health office model in information revolution.

• Implement IR hospitals implementation in 18 high caseload hospitals.

• Support the MOH and its agencies in the development of visualization and analytics dashboards for different sub-systems and build capacity of health workers on advanced data analytics.
Objective 3: Capacity Building and Governance

- Support the development, socialization, approval, and implementation of the health information system governance documents (directives, policies, guidelines, protocols, and SOPs)
- Support efforts to upgrade the digital health innovation and learning center as a national hub for digital health innovation, incubation, development, capacity building, and software clearinghouse
- Improve the pre-service training of HITs through harmonizing the curriculum and building the capacity of training institution through the development of in-service training modules on advanced eHIS subsystems (DHIS2, eCHIS, HRIS, etc.) and administering the training for HITs in 100 DHA woredas
- Incorporate blended learning approaches into pre-service training and in-service training
- Build capacity of Jimma and Mekelle universities to become Centers of Excellence of eCHIS and EMR development and implementation