



Photo: Eric Bond/EGPAF, 2019

# HEALTH INFORMATION SYSTEMS

## *Improving Quality of Care and Health Impact in Malawi*

Digital health uses digital tools to give providers a more holistic view of patients health by improving access to data as well as allowing patients to have more control over their health. Digital health offers real opportunities to improve medical outcomes and enhance efficiency. Since 2004, the U.S. Centers for Disease Control (CDC), funded by the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR), has supported the Malawi Ministry of Health (MOH) in building sustainable point of care (POC) electronic medical records system (EMRS), retrospective data capture solutions, and other health information systems (HIS) to support the provision of quality HIV testing and antiretroviral therapy (ART) services. PEPFAR’s investments in HIS have great potential for improving epidemic control and patient outcomes in Malawi. As these systems become interoperable and integrated, collection and responsible use of comprehensive patient-level data will facilitate targeted responses to micro-epidemics and provide a pathway to sustainable epidemic control.

Since 2019, CDC and EGPAF continue to sustain and improve these investments to ensure digital health is optimized to support patient care as well as reaching and sustaining epidemic control. This project will modernize the POC and e-Mastercard systems to address the full cascade of HIV and TB care by aligning user needs with facility workflows. These enhancements will provide a shared and more complete history of HIV or TB patients, allowing for better-informed clinical care and robust data to inform program implementation and epidemic control efforts. The following solutions have been employed:

### Electronic Medical Records

EMRS was deployed in 206 POC clinics and 520 E-Mastercard sites. The existing EMRS deployed across 726 clinics providing ART service includes modules on ART, HIV testing services, outpatient departments, and antenatal care. EGPAF will enhance functionality in

additional areas critical for HIV and TB care and treatment, developing a number of interoperable modules. The goal is to shift from back-entry stations to POC solutions, leveraging platforms such as mobile phones/ tablets and web-based interfaces. To address the lack of interoperability and integration across modules and systems, the project prioritizes the modernization and enhancement of the module-based approach, ensuring interoperability between different entry points and systems.



### Lab Information Management Systems

The national lab information management systems (LIMS) is designed to support and improve efficiency and productivity of laboratories by keeping track of data associated with samples, tests, quality assurance and control results, as well as workflows, inventory, and instruments. EGPAF supports the MOH Department of Diagnostics with development, deployment, and maintenance

of the national LIMS. The EGPAF team facilitates machine integration and interfacing with the lab information systems and will operationalize a high quality, functional, and universally accepted lab solution that reduces turnaround time of results, improves real time accessibility of results to clinicians, and increases the availability of high quality data for management of patients and labs.

## Data Lake System

EGPAF supports the MOH Department of HIV and AIDS in the management and maintenance of the Central Data Repository to serve as a centralized, interoperable data hub for HIV program and patient data. It is a system that aggregates and manages data (collection, consolidation, processing, storage, modelling, and visualization), helping the MoH and stakeholders discover useful insights to guide decision making. Once data is received from various facilities, it is processed and transformed into a user-friendly format and pushed to a data analytics platform for diverse groups of users.

## Civil Registration and Vital Statistics Systems

EGPAF supports the National Registration Bureau (NRB) with the development and deployment of the electronic system which supports birth and death registration. As of 2021, the Civil Registration and Vital Statistics Systems (CRVS) is deployed in 28 district registration offices, 28 district hospitals, and three central hospitals. EGPAF will support the NRB to decentralized use and access of the systems in clinics. EGPAF will also support the NRB to develop, access, and use dashboards to inform national planning needs.

## Services

### Development and Deployment of Software:

The EGPAF software development team works closely with users to ensure new functionality and ongoing system efficiency. A dedicated development and operations (DevOps) team focuses on national scale deployment, utilizing automatic deployment pipelines.

### Help Desk and Decentralize User Support:

To provide uninterrupted services, EGPAF has developed the National Helpdesk, including a toll-free number, the use of ManageEngine Software, and district-based technical personnel. The project will maintain the quick response standard to site issues, ensuring no more than 24 hours of down time.

### Enabling Connectivity:

EGPAF leverages technological and market advancements to invest in site-level local area networks (LAN) and above site-level through a wide area network (WAN) connectivity infrastructure, allowing for real time connectivity within sites, across systems, and across geo-locations. EGPAF in partnership with TNM and AIRTEL provide virtual private network (VPN) connections to all clinics and labs, allowing for real time transfer and back up of data.

### Ensure Robust and Reliable Hardware, Power Infrastructure:

As the HIS becomes integral to service delivery and operations, proportional investment in hardware, computing capacity and power backups will be required. EGPAF will procure and deploy CDC/MOH-approved upgrades to all infrastructure, such as POC terminals, mobile devices, and barcode scanners.



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