



Opening New Doors for Laboratories and Public Health

Zambia's Unlimited License Agreement

The Ministry of Health in Zambia placed high priority on the significance of quality and timely laboratory data. They collaborated with the US Centers for Disease Control and Prevention (CDC) and the Association of Public Health Laboratories (APHL) in 2013 to identify and select a Laboratory Information System (LIS) to strengthen data management in laboratories testing for HIV care and treatment.

A LIS is a software-based program that captures, processes, manages and stores laboratory data to support laboratory operations, workflow and result reporting for patient care and public health needs. With support from the President's Emergency Plan for Aids relief (PEPFAR) initiative, MoH Zambia and its stakeholders held a conference and selected Disa*Lab, a commercial LIS from South Africa, through a competitive bid process as the best suited for Zambia.

Introducing the Integration System

Over the last eight years, demand and use of the LIS has grown significantly, with 39 laboratories actively using Disa*Lab. 19 of these use Disa*Lab in all laboratory sections while 26 have the LIS deployed only in molecular biology laboratory sections covering Specimen Reception, Viral Load (VL), Early Infant Diagnosis (EID), Covid-19 and HPV testing. The LIS also manages and tracks data, which includes quality control, test staff workload and results retrieval among many more sections that have been critical in the implementation of quality management systems (QMS) and accreditation of laboratories under the ISO15189 standard.

Disa*POC LIS is the Disa*Lab module for Point of Care devices which supports instruments such as GeneXpert and m-PIMA. Disa*POC is deployed in 40 healthcare facilities testing for TB, EID, Covid-19, and HPV. Disa*Lab and Disa*POC allows specimen referral across the different locations.

Disa*Link LIS grants the remote registration of specimens and result printing which has been crucial in reducing workload for specimen registration at the testing site.

laboratories as well as reducing the turnaround time of results. Disa*Link is currently installed in 65 facilities, enhancing the tracking system of barcoded specimens from the testing sites to the laboratories. Disa*Link is integrated with Disa*Lab allowing seamless transfer of test request data from specimen collection hubs or clinics to testing laboratories, and then the return of electronic results from laboratories to healthcare providers.



Recently installed LIS at the Chipata Central Hospital site in the Eastern Province.

The LIS is further integrated with other third-party systems, including but not limited to the Electronic Health Records system (EHR) providing communication of test requests and results. In addition, data from the LIS is consolidated into the Data Repository located at the MoH headquarters, and data from the facilities with LIS is transmitted to the data repository in nearly real-time. This allows for central storage, extraction, analysis and reporting of data for various uses including policy decision-making and trend analysis.

Growing Demand for Expansion and Standardization

While the deployment of the LIS at VL and EID testing laboratories permitted rapid up-scale of testing and reporting as mandated by PEPFAR, MoH and CDC are keen to avoid disparity in data management practices within a laboratory. The aim is for a universal solution for Zambia. Zambia's Laboratory Strategic Plan also draws attention to the non-standardization of laboratory data recording and reporting challenges. Bridging this gap would require expanding the LIS in all provincial, several district laboratories, many health center laboratories, and health centers with Point of Care testing devices in local jurisdictions.

In addition, ongoing use of the LIS required payment of annual renewals for over 80 licenses that have different payment dates based on the date of deployment per site. With a goal of advancing a streamlined, cost-effective solution that also factored in the needs of Zambia's laboratories, APHL through their agreement with the Center for Infectious Disease Research in Zambia (CIDRZ) collaborated with the vendor on an Unlimited License Agreement (ULA) to enable the use of a robust, proven LIS nationally at all tiers of Zambia's laboratories with a flat fee regardless of the numbers of laboratories or sections using the LIS. The ULA removes the acquisition cost for each license and lowers the ongoing cost per-license cost. As the number of laboratories using LIS, increases, the lower the per-license cost.

As a part of the ULA, the vendor conducted a transfer of knowledge training for a local team of ICT and laboratory staff to be responsible for deployment of the LIS and providing first- and second-line support moving forward. This provided a sustainable capacity building initiative for local staff to manage the LIS and deploy it to as many sites as the MoH and stakeholders would need.

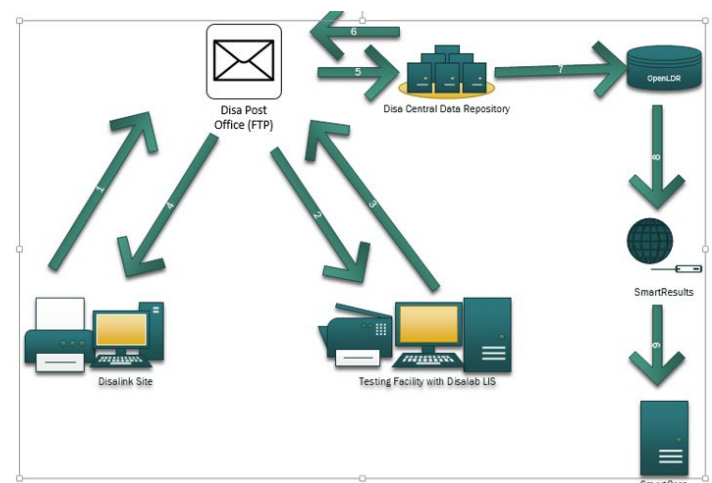


Diagram of the flow of the sample referral system network



Chipata Central Hospital Chemistry Section [Analyzers integrated with LIS]

Next Steps

APHL, through their agreement with CIDRZ, aims to collaborate with the MOH and, in 2021-2022, will implement the LIS at an additional 30 laboratories while maintaining over 400 computers using the LIS at laboratories as well as point of care locations.

This project was 100% funded with federal funds from a federal program of \$1.5 million from the Subaward Agreement# M100 F1 NU2GGH002122 and the Prime Award # NU2GGH002122.