

METS WATCH

Integration of Electronic Based Surveillance System (eCBSS) into UgandaEMR

Tuberculosis (TB) remains a public health problem in Uganda and is listed as the fourth cause of death among communicable, maternal, neonatal, and nutritional diseases.



Samuel Lubwama leading a discussion on the FHIR standard being used in the exchange of data from UgandaEMR to eCBSS during the Integration Workshop

By Nancy Karunganwa
and Samuel Lubwama

In 2020, an estimated 90,000 people are reported to have fallen ill with TB, while 16,100 are estimated to have died (WHO, Global Tuberculosis Report, 2021).

As part of TB disease control, the World

Health Organisation (WHO) recommends countries establish strong surveillance systems with capability to support case finding, contact tracing, and follow-up of those on treatment.

The Ministry of Health, National TB and Leprosy program with support from CDC through Baylor Uganda worked closely

with HISP, MoH-DHI, METS and Defeat to develop the national electronic case-based surveillance system for TB and Leprosy in Uganda.

This helps track individual cases of TB; trace their contacts for TB screening, and monitor those who initiate treatment until they are cured.

The eCBSS systems plays a key role in the identification of new and relapsed cases for both drug-susceptible TB and Drug resistance TB at about 200 public health facilities.

However, having a disease-specific system to manage patient diagnosis and treatment like TB, alienates its management from other medical care the patient receives within the health facility due to duplication of data and difficulty in relating data on the other services received by the patient.

This led to the need to integrate eCBSS with facility based electronic medical records (EMR). This was piloted with UgandaEMR that is currently installed in 1,300 public health facilities and will eventually be integrated with other facility EMRs.

In order to set up and develop platforms for the exchange of data between Point of Care (POC) systems, UgandaEMR-eCBSS integration was selected as a pathfinding integration for other systems to share information. As a front runner,

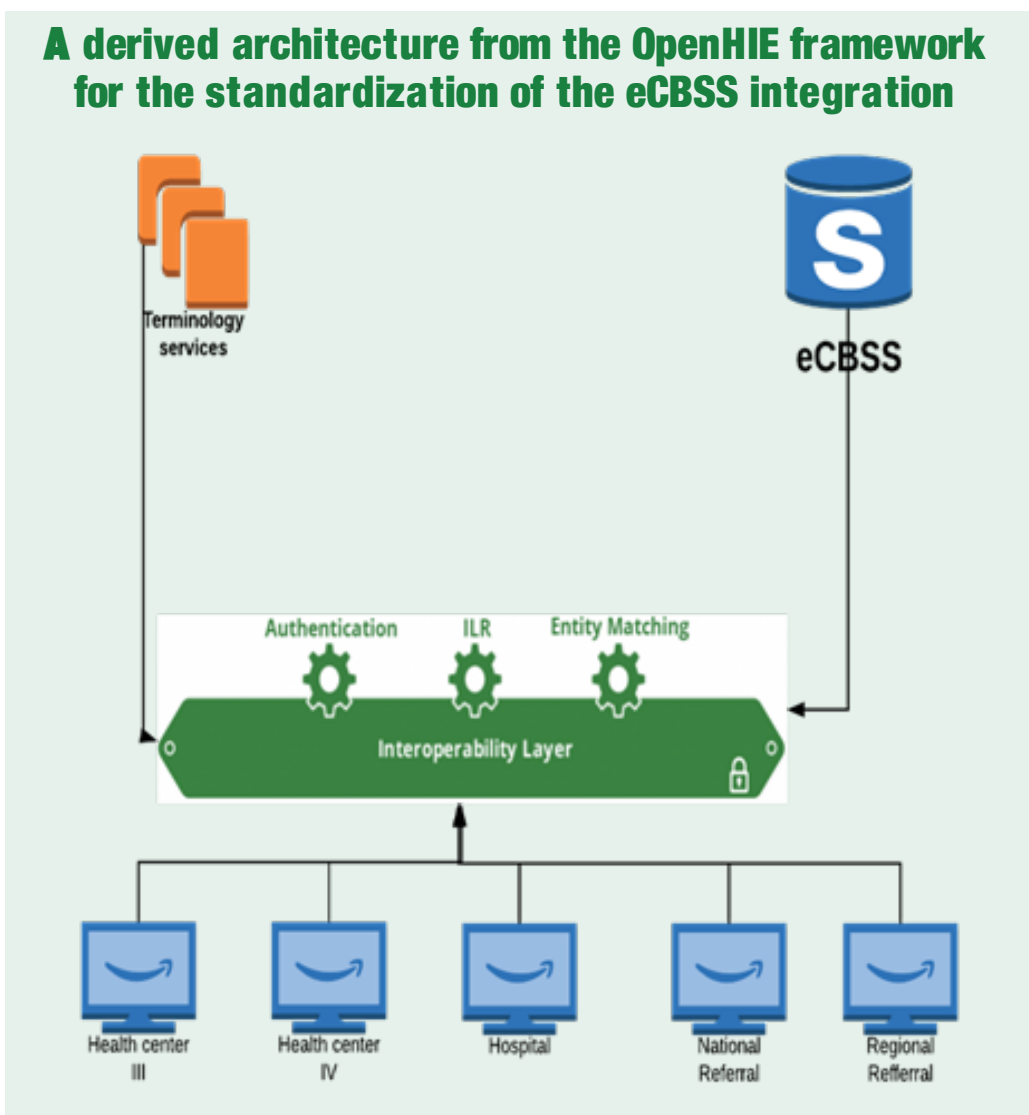
a need for selection of appropriate technologies and approaches was required in order to future-proof the interoperability platforms built to aid the exchange of information between the existing and to come POC system and eCBSS.

The utilization of concepts from the Open Health Information Exchange (OpenHIE) architecture enabled standardizing of the health information exchange.

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Electronic medical records systems, currently running in over **1,300** Public health facilities



About UgandaEMR as a POC System

UgandaEMR is a nationally approved electronic medical records systems, currently running in approximately 1,300 public health facilities (as of February 2022). UgandaEMR has an inbuilt TB disease program module that supports the data management for the treatment of a TB case. This data is shared the eCBSS

to aggregate the TB care and treatment information across multiple facilities a health information exchange (HIE).

How the eCBSS Patient Data Management Works

When a patient is diagnosed with TB in a public health facility using eCBSS data capture module, their demographic,

laboratory, diagnosis, contact tracing and treatment plan including drug prescription information are entered into the system. The treatment plan information is updated for each visit throughout the course of 6 to 9 months of treatment, including referrals and final outcomes.

How the UgandaEMR Data Management Works

When a patient is diagnosed with TB, a patient may be registered in UgandaEMR if they do not exist (demographics and contact information) and thereafter enrolled into the TB Program as either a susceptible or drug resistant case. The patient is then assessed and treated, and this information is captured throughout the course of treatment

How the eCBSS-UgandaEMR Data Sharing Works

The patient TB information is sent from UgandaEMR (POC System) at the health facility to the mediator layer, a stage of interpreting the request, and translates it to what the eCBSS will process. The information is then sent to the centralized national tracking surveillance

system (eCBSS) where the TB Program can draw conclusions from the data using analytical options of DHIS2. Some of the standards used in the information exchange include Fast Healthcare Interoperability Resources (FHIR) – a template and SNOMED – a dictionary.

Important to note is that these systems compliment each other given that some HIV patients are on TB treatment. The integration will allow data analysis of TB and HIV cases simultaneously. This will inherently reduce the number of tools the health workers use to manage TB/ HIV patient.

Integration Activities and Next Steps

In June 2022, MoH through NTLP, METS Program met to review and validate an integration that allows UgandaEMR and

other facility POC systems to synchronize data with the eCBSS. Paul Mbaka the Assistant Commissioner DHI- Ministry of Health officiated at the closing of the five day workshop.

The workshop outputs will be presented to senior management at the Ministry of Health through the Health Information Innovation and Research (HIIRE) Technical Working Group (TWG) to pave the way for a field pilot in selected health facilities leading to a national scaleup.

Once this integration is completed, MoH will have a stronger surveillance system nationwide given that the eCBSS will be connected to more health facilities using different electronic medical record systems.

Pictorial from the Intergration Workshop



INTERVIEW

Building ICT Skills of Service Providers Using BUHIC



Jonathan Mpango, taking the participants through a practical session on the hardware components of a computer at Mbarara Regional Referral Hospital. This was one of the first regional hospitals to get training on BUHIC

By Nancy Karunganwa

Jonathan walks in with a happy stride from another meeting and apologizes for having canceled earlier. He explains his excitement as a result of his earlier meeting which had resulted in automated retrieval of data from facilities using UgandaEMR into the PEPFAR In-Country Reporting System (PIRS)! He is accompanied by Sharon Abowe, whom he is in the process of handing over the BUHIC activities and coordination. She smiles brightly as she walks in and takes her seat with grace.

We are short of time and quickly dive into the interview.

Tell us about yourselves

My name is Sharon Abowe (SA), I work as a Health Information Systems (HIS) Analyst, and I am a BUHIC trainer of trainers, currently in the process of taking over the coordination of all BUHIC Activities at METS.

And I am Jonathan Mpango (JM) the Team Lead for Systems Development at METS, I handle all development of systems in the initial stages.

What is BUHIC?

JM: BUHIC is an acronym for Building Uganda's Health Informatics Capacity at all levels. This program targets health workers with the aim of improving their ICT skill set and knowledge so that they can be able to accept and use the various digital initiatives currently being rolled out by the Ministry of Health.

Why was BUHIC a necessary intervention?

JM: If the health sector is to be digitized at all levels, the ICT knowledge and skill of the health workers must be nurtured to remove the fear of the unknown, and to close that knowledge gap. If this is done, the infrastructure that is being channeled into the sector, by the government and funding partners, will be used appropriately.

The facility staff now have insights into using a computer, and developments like Telehealth and Point of Care will now become easier to roll out, especially in government facilities.

MOH has enrolled on the digitalization drive across the major health facilities (starting with Hospitals and HCIVs)

Who are the partners involved?

JM: This is a multisectoral project and several stakeholders are involved; We have worked closely with the Ministry of Health (MoH) specifically the Division of Health Information; which was founded on the belief that eHealth is a key enabler for supporting the health system to deliver good health care to the population, and Human Resource Department which directly manages facility staff.

CDC, Implementing Partners, Local Governments, and the Academia under Makerere University School of



Sharon Abowe briefing Anthony Muganzi, Head IT at Mbarara Regional Hospital.

Public Health and Kyambogo University are also key stakeholders in this project.

What kind of work did you do? What was involved in the process of implementation?

JM: A capacity needs assessment was carried out and it exposed the knowledge and skills gaps and where it existed, a curriculum was then developed to address these gaps.

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Makerere and Kyambogo Universities developed the curriculum which covers basic ICT, introduction to networking, troubleshooting, and basic security.

The second module highlighted productivity and the use of

Microsoft packages (Word, Excel, PowerPoint) to help users prepare reports as well as make presentations. An introduction to Social Media applications was added given that this is the future of communication.

The training had practical sessions that allowed the participants to interact with the different productive functions that were taught.

Each of the two modules was made up of 6-7 sessions. A central pool of trainers was then created to support training, and these facilitate the rollout program to the eight regional referral Hospitals.

Where is it being implemented?

SA: BUHIC training has been implemented at Regional Referral Hospitals and these are Mbale, Masaka, Mbarara, Lira, Soroti, Hoima, Jinja, and Mubende. The reason for piloting at these hospitals is that we were leveraging on the already existing ICT infrastructure and the integrated facility Management Information Systems set up by the Ministry of Health.

What challenges have you encountered?

SA: Mindset of the health workers. During the assessment and beginning of classes, we noted that there was fear and skepticism about learning what is normally thought to be the “younger generation’s scope”

Time management was also an issue of concern especially given the fact the trainings are carried out at the regional referral hospitals where the health workers work. This resulted in divided attention during the training.

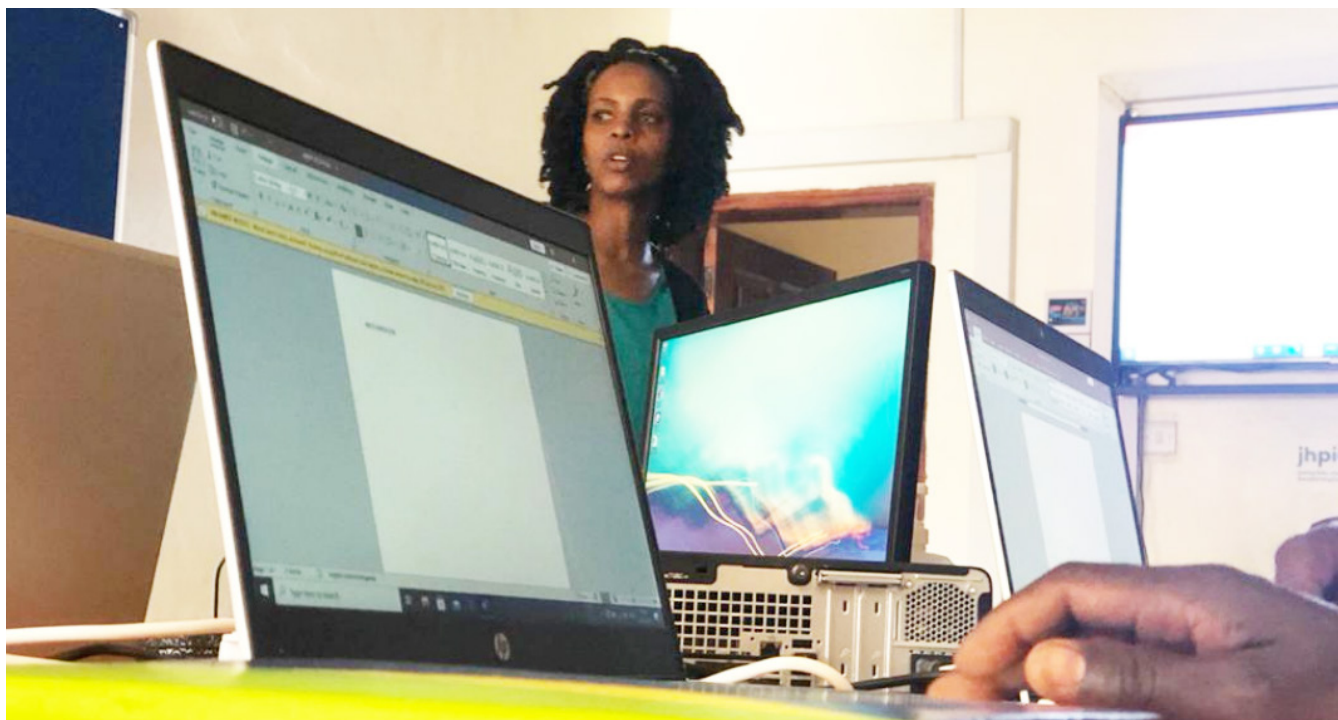
Poor internet connectivity for the practical sessions slowed down the trainings.

What lessons have you learnt?

SA: It is possible to learn at any age if you have the commitment and learning does not stop at any level. We had some people realize that they had underestimated the use of their smartphones before the BUHIC classes.

Support from all levels is another important lesson, this allows for easy interaction with the facility staff. MoH, IPs, Local Government, and other key stakeholders must appreciate why one is implementing this kind of program to make it easy for one to introduce and roll it out.

The Internet and a good learning environment that allows practical lessons make learning interactive and faster. It is very important to empower people and the fact that more facilities are demanding the training indicates that staff are starting to appreciate and embrace eHealth individually.



Participants during a practical session on Microsoft Word

For eHealth to work, there is a need for a sustainability plan. Having this equipment alone is not enough. It needs constant maintenance and upgrades, and these facilities must be equipped to manage this. Short of this, we shall have a working phase and then hit a dead end. Change management is key in this entire process.

What is your call to action for the government?

JM: The program should be scaled up to lower-level health facilities and not just the Hospitals. When all facilities are onboarded, information will be readily available, and we shall have created a skilled workforce for the health sector.

Digitalization of the health sector will make the patients' experience in the hospitals better and this will help the ordinary citizen to have faith in the health system where a lot of investment has been done by the government and the funding partners.

What resources are available under BUHIC?

SA: We have developed several training materials - manual, training slides for trainers and health workers (participants). We have a pool of trainers to conduct the training sessions.

What next for BUHIC?

SA: We are looking at developing other curriculums, carrying advanced training of trainers, and scaling up to the other eight regional referral hospitals. We see the program being scaled out to all health facilities (national and district levels) to help realize the Ministry of Health's goal of fully digitalize the health sector.

“ Testimony

The ICT usage training greatly helped a section of staff to improve on electronic patient registration, troubleshooting, equipment management. However, the other untrained section of staff still has a challenge which somehow affects our performance.

We hope that this training can be extended to support the remaining staff in our hospital to acquire these ICT skills to improve efficiency.

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