METS M&E Technical Support Program
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METS WATCH

Transforming Health Care Through Linked Digital Systems

The Ministry of Health (MOH) has embarked on a drive to transform health service delivery through use of digital systems. Working with partners, the MoH is spearheading the design, development, and implementation of interlinked health information systems (HIS) that include Electronic Medical Record Systems (EMRs), electronic Community Health Information System (eCHIS), laboratory and supply chain systems. The ultimate goal is to leverage Information and communication Technology (ICT) to improve medical supplies accountability, availability of health data, healthcare quality, and to establish a transferable medical record for enhanced continuity of care.

To support the goal, many agencies have increased investments in ICT to support health systems. Unfortunately, some of these do not 'speak with each other' or exchange information which is important for continuity of patient care. To address the challenge, the MOH has (i) adopted health data standards in a consistent and comprehensive manner as a key to enabling meaningful healthcare interoperability; and (ii) established a national digital health coordination committee to oversee the integration and interoperability of HIS, procurement and distribution of HIS infrastructure, and development of health information exchange (HIE) policies and standards.

One notable success to date is the exchange of information between the Viral Load database and the EMRs systems (UgandaEMR and ClinicMaster), already happening at over 50 health facilities that provide antiretroviral therapy. This has greatly reduced the results turnaround time for viral load testing, allowing providers to make faster decisions on patient care.

Moving forward, METS will continue to support systems integration including EMRs and laboratory (ALIS) and roll them out once completed.

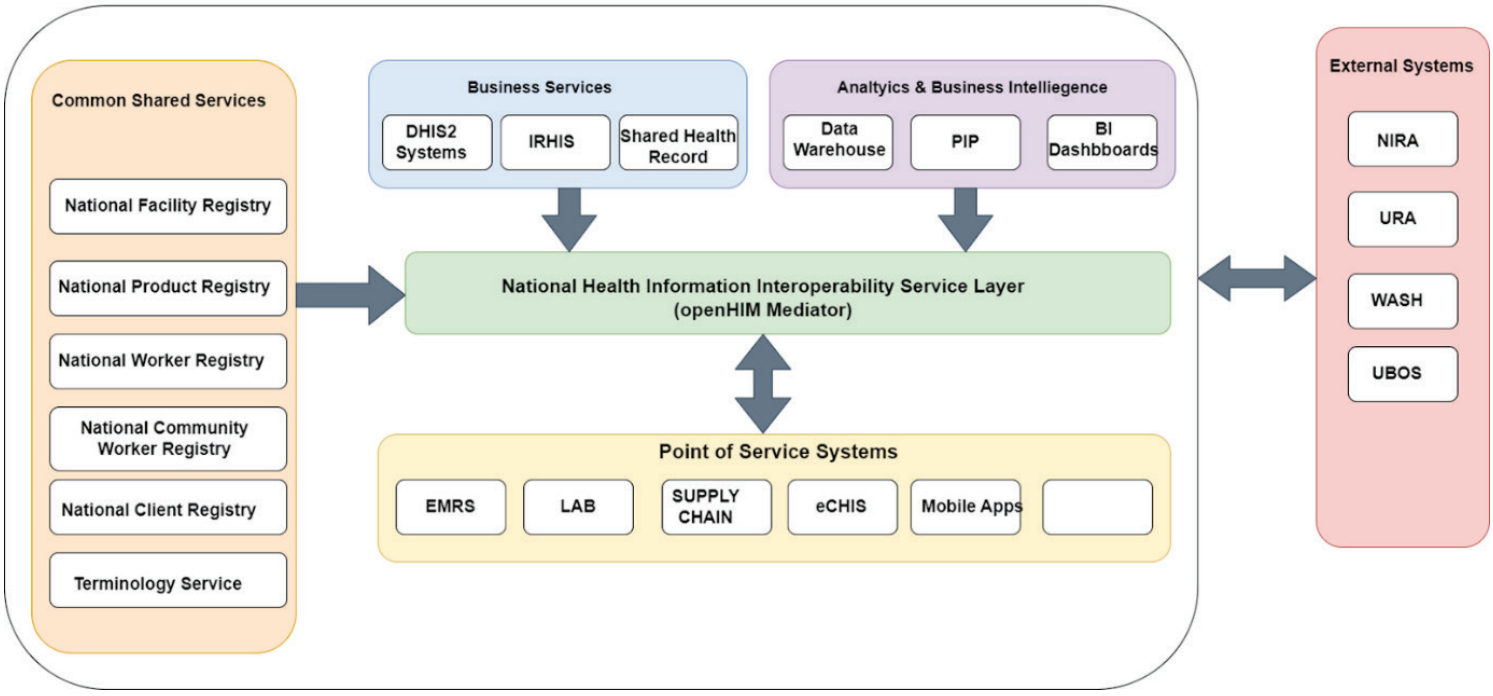


Figure 1. The Uganda eHealth Interoperability Architecture

Improving Outcomes for Young Mothers and their infants:
Evaluating the G-ANC/PNC Differentiated Service Delivery Model

By age nineteen, one in four (25%) girls in Uganda has had a baby. This often leads to poor health for the young mothers and their babies, as they shy away from seeking proper health services. As a result, complications such as over bleeding, stillbirths, anxiety and death are more common in this population. Contributing factors include socioeconomic factors, psychosocial stress, discrimination, fear of punishment and banishment.

To mitigate these risks, in 2018, the Uganda Ministry of Health adopted a differentiated model of care referred to as Group Antenatal and Postnatal care (G-ANC/PNC). This method brings together small groups of young women, aged 24 and below, expecting babies around the same time. The model was initially piloted at 33 sites from June 2018 to July 2019. The pilot demonstrated improved health behaviors and outcomes among AGYWs leading to a national rollout that now covers over 685 health facilities

Led by trained peers or health workers, 6-12 adolescent and young women (AGYWs) are grouped together to promote peer-to-peer discussion, learning, and psychosocial support throughout pregnancy, at childbirth, postnatal period until the baby makes 2 years. Additionally, they are linked to other community services, ensuring comprehensive care. This initiative is aimed at improving retention of mothers, ensuring hospital delivery, screening for risks as well as immunization of the infant.

The MOH set out to evaluate the uptake, effectiveness, acceptability, enablers, barriers, and cost of implementing the model and using the findings to improve resource advocacy for national scale up. In June this year, teams set out to health facilities countrywide to collect data. The one-month exercise results will be analyzed and findings disseminated to all stakeholders, in the coming months.

METS conducted a comprehensive field training and orientation workshop, equipping evaluation teams with the necessary skills and tools to effectively guide participating health facilities. Kenneth Mwambi (CDC) takes the teams through consent ethics and requirements.

Key measures of the model include retention in care, number of health facility deliveries, family planning uptake, HIV status at discharge, viral load suppression, and the percentage of HIV-exposed infants testing negative at 1.5 years.

This evaluation highlights the G-ANC/PNC model's potential to transform and improve maternal and child health for AGYWs in Uganda. By addressing the specific needs of young mothers, the model promises improved health outcomes and a supportive community environment for young mothers and their infants.

Field team (CDC, METS, Reach Out Mbuya) reviewing data entered in the G-ANC register at Kawaala HCIII on 16th July 2024.

Understanding Sentiments of the Public during Health Threats

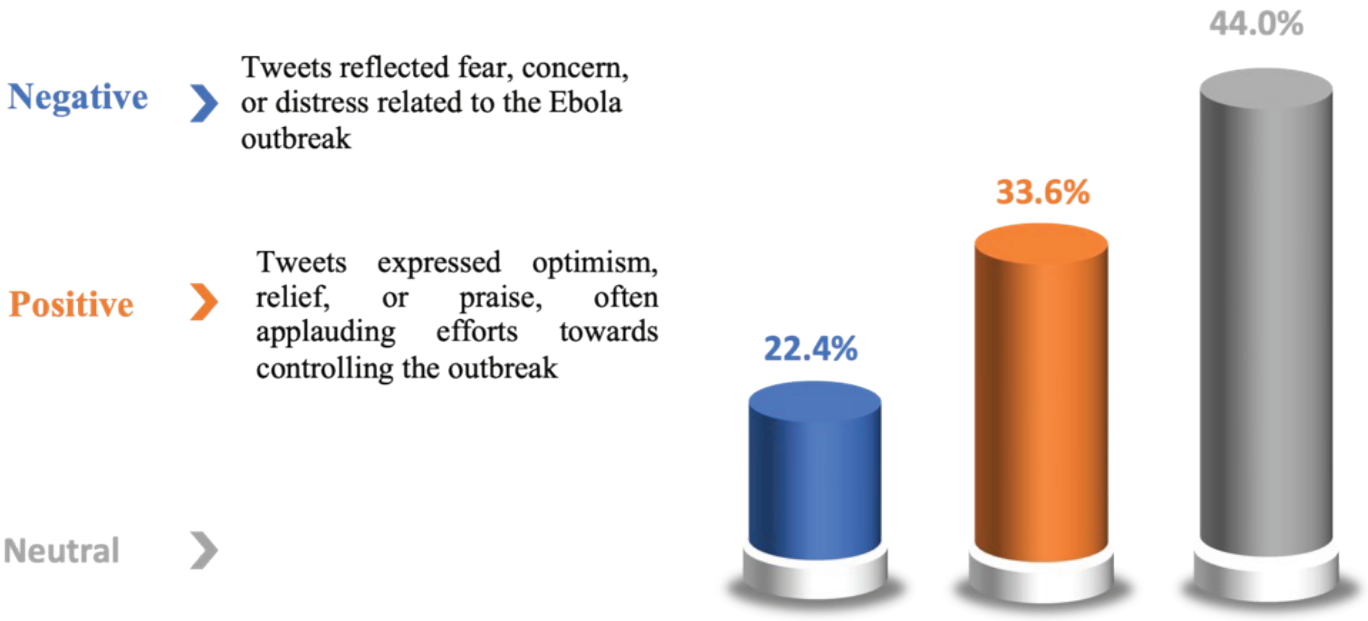
Uganda faced a significant health crisis with the outbreak of Ebola Virus Disease (EVD) declared on 20th September 2022. There were 164 cases (142 confirmed and 22 probable), 55 confirmed deaths, and 87 recovered patients. This outbreak generated considerable attention and discussion on various social media platforms, particularly on X (Twitter). METS embarked on a research study utilizing advanced artificial intelligence (AI) deep learning models to analyze the sentiments expressed in these online discussions to understand the public's emotions towards the outbreak.

The study focused on classifying the sentiments in 8,395 Ebola-related tweets into three categories: positive, neutral, or negative. Negative sentiments were tweets expressing concerns, fear, or distress related to the outbreak. Neutral sentiments conveyed factual information, updates, or statistics without any emotional tone, while positive sentiments expressed optimism, relief, or praise for efforts such as healthcare workers' successful containment measures or supportive international aid.

The researchers developed three advanced deep learning techniques for this analysis: a 6-layer convolutional neural network (CNN), a 6-layer long short-term memory (LSTM) model, and an 8-layer Bidirectional Encoder Representations from Transformers (BERT) model. Among these, the BERT model stood out, achieving a remarkable accuracy of 95% in classifying the sentiments. This highlights the effectiveness of AI models in natural language processing tasks, such as understanding public discourse on critical subjects.

These findings emphasize the value of AI-driven sentiment analysis in guiding government agencies, healthcare organizations, and other stakeholders. By accurately interpreting public sentiment, these entities can create targeted messages that address public concerns, provide reassurance, and counter misinformation, thereby improving communication and policy implementation during outbreaks. The study also demonstrates the transformative potential of AI-driven sentiment analysis in enhancing public health service delivery by enabling more effective,

The sentiment distribution in the analyzed tweets was as follows:



For further details, a research article was published in the MDPI Life journal under the special issue "AI and Precision Medicine: Using Machine Learning for Disease Diagnosis and Prediction." The full study is accessible via https://doi.org/10.3390/life14060708.

Gallery

CDC implementing partner attended a communicators roundtable meeting on Wednesday 3rd July 2024 at IDI offices at Makerere University. The representatives discussed branding provisions, strategy and collaborated on various communication initiatives.

METS is providing technical support to implementing partners to conduct evaluations to improve programs. On 24th July 2024, METS in collaboration with CDC supported four implementing partners (Baylor Uganda, Infectious Disease Institute, Reach Out Mbuya and AIDS Information Centre) to design objectives and methods to be used for the evaluations.

Rose Baryamutuuma (Left) and Ausse Kalega (Right) with teams at various Health Facilities during a Key/Priority Populations data quality assessment in July 2024. The exercise sheds light on the effectiveness of the KP Tracker as well as the quality of the data entered at 150 sites. Teams were mentored at selected health facilities as a step towards having quality data for informed decision making.

METS presented to CDC, USAID and MoH the automated data transfer from UgandaEMR+ to DHIS2 and PIRS on 1st July 2023 at Kisenyi HCIV. The integration will reduce workload for the data entrants as well as manage data irregularities that have been experienced with manual entries.

METS together with teams from MoH, CDC visit CPHL to consolidate systems within the MoH infrastructure. The Ministry of Health (MoH) has embarked on the journey to develop a national data warehouse, a centralized repository that will store integrated data from various data sources in the health care sector to aid in data access and analysis.

The Governance, Leadership and Management (GLM) training for Masaka Regional Referral Hospital was officiated by Dr. Martin Sendyona, Head of the Standards Compliance and Patient Protection Department, (SCAPP) Department at MoH on 22nd July 2024.

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