



TechnoHealth Surveillance Newsletter



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From Editors' desk

Dear reader,

The Editorial Committee welcomes you to Volume 4, Number 1 & 2 of the *TechnoHealth Surveillance*. In this issue, we share the following:

- Initiatives to strengthen event-based surveillance in the communities of cross-border ecosystems
- Exchange visit to share experiences on use of digital technology in disease surveillance
- Collaborative strategy between the Ministry of Livestock and Fisheries, Food and Agriculture Organization of the United Nations and SACIDS Foundation for One Health to strengthen animal health surveillance at all levels
- Upcoming events that SACIDS Foundation for One Health plans to showcase its research and training activities and application of digital technology to enhance disease surveillance

We look forward to your feedback and comments on this and other issues of *TechnoHealth Surveillance*.

You are kindly requested to share with us stories on health-related events occurring in humans, animals and environment for the sustainability of our newsletter.

Enjoy your reading!

Towards strengthening EBS in the cross-border ecosystems

Event-based surveillance (EBS) is one of two main types of surveillance used to identify and track infectious diseases and other public health events. It complements the indicator-based surveillance. The primary goal of EBS is to detect as early as possible unusual events before they turn to outbreak, and therefore it significantly increases the sensitivity of the surveillance systems. The ability to take prompt and effective action to contain threats to national and global health security depends on the ability of public health surveillance systems to provide early warning of outbreaks and other events.

To promote innovations that strengthen EBS in the cross-border ecosystems, the SACIDS Foundation for One Health (<http://www.sacids.org>) conducted assessment on the presence and functionalities of EBS in selected areas forming the cross-border ecosystem between Tanzania and Uganda. Supported by a grant from the Rockefeller Foundation, and in collaboration with Ending Pandemics, through Connecting Organization for Regional Disease Surveillance (CORDS – www.cordsnetwork.org), the assessment was conducted at national and regional levels with a focus in the cross-border ecosystems, which included (i) Misenyi (Tanzania) - Kyotera (Uganda), (ii) Kyerwa (Tanzania) – Isingiro (Uganda) and (iii) Ngara (Tanzania) using *Afyadata* (<http://afyadata.sacids.org/>). The purpose was to identify the current information on collection methods of human and animal health events, identify

areas of improvement and share best practices.



Discussions between SACIDS researchers and officials responsible for disease surveillance in Kyotera, Uganda

Best practices identified the national level

- Event-based surveillance was present in the countries where assessment was conducted.
- There were dedicated staff for EBS
- The operational coordination units were in place
- There was centralized electronic database in use to record information about disease events
- One Health coordination desk was in existence in Tanzania
- Electronic data capture mechanism was in place for data been submitted from district level to the national level
- Coordination capacity was in place for cross-border collaboration



Discussions between SACIDS researchers and officials responsible for disease surveillance in Isingiro, Uganda

Challenges/gaps at the national level

- There was no evidence on the existence of standard operating procedures for EBS
- There was no evidence of One Health approach in EBS
- The surveillance systems were not operating on the other side of the border in the neighboring countries
- There was no evidence of data sharing practices between the neighboring countries
- It was challenging to estimate the total number of outbreaks detected by EBS in a defined period of time as there were no appropriate recording for this purpose
- Although coordination capacity was in place for cross-border collaboration, it was noted that coordination was not yet operational

Best practices identified at the cross-border and community level

- EBS was been conducted in the cross-border and community level areas for specific public health programmes
- Community Health Attendants were in place and working on voluntary basis with some

incentives depending on the set up of the programme they were working with

- The major source of EBS data was the community members
- Electronic EBS data capture mechanism was available at district level



SACIDS researcher been screened for fever prior to entry to health facility as part of Ebola Virus Disease prevention strategies in Isingiro, Uganda

Challenges/gaps reported at the cross-border and community level

- EBS was generally not in place for animal health domain
- There was no evidence on the existence of standard operating procedures for EBS
- CHAs were mainly working for specific programmes and not on general public health event surveillance
- The mechanism of EBS data capture at community level was largely paper-based
- The captured EBS data was submitted to higher levels mainly on monthly basis
- The EBS data collected at community level was delivered to higher levels by physical visitation
- There was no feedback to data collectors using paper-based system

- The surveillance systems were not enabling real-time detection of, and response to health events
- There was no evidence of One Health approach in the implementation of EBS
- There was no operational EBS coordination unit at the cross-border and community levels
- There were no dedicated staff for EBS at the cross-border and community levels
- Intersectoral collaboration was not in place at community level
- There was no evidence of sharing relevant disease surveillance information between different sectors within and between countries
- There was no evidence of the established frameworks or standard protocols for intercountry/cross-border collaboration relating to disease surveillance
- The relatively well established EBS at national level was not reflected at cross-border and community levels
- It was challenging to estimate the total number of outbreaks detected by EBS at a given time period as there were no appropriate recording for this purpose
- The digital systems were not in place at community level to record GPS to enhance contact tracing
- Cross-border disease surveillance committees were in place but not operational
- Understaffing, insufficient training at all levels and inadequate engagement of community were reported as the factors negatively affecting the operationalization and performance of EBS

A workshop of was held in Entebbe Uganda from February 19-20, 2019 to share the results of assessment among CORDS network members and other stakeholders, and identify gaps that could be addressed by the countries forming the shared ecosystems. The Food and Agriculture Organization of the United Nations (FAO) country offices in Tanzania and Uganda were represented in the workshop, and the Event Mobile Application (been piloted by FAO in different countries) was shared with participants.



Sharing experiences on use of digital technology in disease surveillance



With its six member networks, Connecting Organizations for Regional Disease Surveillance (CORDS – www.cordsnetwork.org) aims to contain outbreaks at the source and keep communities safe from the spread of infectious diseases in animals and humans. One of its strategies is to promote innovations that strengthen event-based surveillance (EBS) at community level. Supported by a grant from the Rockefeller Foundation, and a collaboration with Ending Pandemics, the CORDS member networks implemented the internetwork project whose one of the objectives was exchange visits to learn best practices across and within regions, and identify how to further empower communities and enhance cross-border health security.

From December 17-21, 2018, sixteen individuals from CORDS' six member networks visited Tanzania to learn experiences, good practices and challenges on the use of digital technology (AfyaData) in EBS (More information in the TechnoHealth Surveillance Volume 3, Number 11 & 12). Successively, from February 23-25, 2019, Calvin Sindato and Eric Beda from SACIDS Foundation for One Health visited Thailand to learn and exchange experiences on the use of digital technology in EBS. They visited Mukdahan Province Health Office, Mukdahan Province Hospital, a health centre in Mukdahan Province, and a health promotion hospital in Mukdahan Province.



They also visited the Thai-Lao cross-order ecosystem to learn practices on disease prevention strategies.



They ended the trip by visiting the Chiang Mai University to learn and exchange experiences on the use of PODD and AfyaData in disease surveillance in human and animal populations and their environment.



During the trip, collaborative opportunities were identified including the potential to revolutionize the paper-based reporting system to digital system to enhance early containment of disease outbreaks.

CORDS is a Non-Government Organization comprised of six international member networks

(<https://www.cordsnetwork.org/cords-networks>) in 28 countries working to reduce and prevent the spread of diseases by exchanging information and best practices among regional disease surveillance networks across the world in order to improve their capacity to prevent, detect, and control the spread of epidemics. Its network members include: the Asia Partnership on Emerging Infectious Diseases Research (APEIR), the East African Integrated Disease Surveillance Network (EAIDSNet), the Mekong Basin Disease Surveillance (MBDS), the Middle East Consortium on Infectious Disease Surveillance (MECIDS), the SACIDS Foundation for One Health (formally known as Southern African Centre for Infectious Disease Surveillance), and the Southeast European Center for Surveillance and Control of Infectious Diseases (SECID).

Linking animal health events from community to global scales; the power of digital technology

The purpose of surveillance is to provide timely and relevant information to trigger early warning when a disease event occurs to enable risk managers to take the necessary actions to limit the spread of the disease and minimize its impact.

Recognizing the need to report animal health events in a timely manner, which

is the requirement of the OIE World Animal Health Information System, to enable OIE member countries to protect themselves from animal diseases including those transmitted between animals and humans, the SACIDS Foundation for One Health, Ministry of Livestock and Fisheries (MoLF) in Tanzania and the Food and Agriculture of the United nations (FAO) have embarked on a mission to bridge their strengths in

the designing and deployment of digital tools to enhance event-based surveillance.

Initial discussions were made with the MoLF and FAO country office in Tanzania. Discussion was extended to FAO Headquarters in Rome Italy. The aim of these discussions was to identify the collaborative opportunities and draw the road map to a shared platform between Afyadata and EMA-i, which are digital disease surveillance tools developed by SACIDS and FAO, respectively. The goal is to link animal health events from community to global scales to enhance their prompt management and risks posed by them.

The context and key functionalities of AfyaData and EMA-i were highlighted, which included the following:

- There is a great degree of similarity between AfyaData and EMA-i in terms of technical features
- EMA-i deployment starts from district level to National and Global levels (EMPRES-i) and covers mainly animal domain. It targets veterinary officials as point of data capture.
- AfyaData deployment starts at community level focusing mainly on syndromic surveillance to enhance event-based surveillance and covers human, animal and environment domains. In addition, AfyaData supports official livestock disease surveillance in Tanzania

- AfyaData does not yet have provision to link with EMPRES-i
- AfyaData has knowledge repository to support clinical assessment and trigger response
- FAO is working to link laboratory results with epidemiological information in Tanzania
- Both systems have been deployed in Tanzania in collaboration with the Ministry of Livestock and Fisheries
- Both systems are embedded with feedback loops
- Data collected through AfyaData and EMA-i are kept on confidential grounds for the Ministry of Livestock and Fisheries and access for both systems is based on user defined specific code
- In Tanzania, data collected through EMA-i are accessed by relevant stakeholders from district (District Veterinary Officer) to national level (Disease surveillance unit). Data collected through AfyaData are accessed by relevant stakeholders from ward level (Livestock Field Officer) to national level (Disease surveillance unit)
- On the ground in Tanzania, there is close collaboration between SACIDS Foundation for One Health, Ministry of Livestock and Fisheries and FAO teams, who are testing the two systems in the field.
- A need to advance the collaboration to make the two

systems interoperable has been highlighted

- Linking community health reporting via AfyaData to EMA-i

AfyaData is an open source digital disease surveillance tool developed by SACIDS. It is a set of two applications a mobile android based client and a web-based application acting as a server. The mobile client is used for collecting and submitting surveillance data, and receiving and/or tracking feedback from various levels. The server component caters for data storing/hosting and management. AfyaData toolset has the capability to manage entire data collection lifecycle, from managing users, loading forms, collecting data in the field, sending collected data to server, and viewing data on the server and providing feedback to data collectors and/or persons of interest. The system is designed to collect georeferenced data online or offline in locations without internet and data can be submitted at location with internet. In addition, the system supports prompt analysis and visualization of data. The system can integrate data from multiple sources and is enhanced with an early warning short message service (sms) for early warning notification to decision makers on health events through their mobile phones. AfyaData supports multiple languages and is powered by One Health Knowledge Repository (OHKR), which is a decision-making system with expert-authored content that helps to support the prediction of likely disease conditions based on the reported signs and symptoms. The collected data are accessed near to real-time by all relevant authorities through specific access code.

could be duplicated in other countries where EMA-i has been deployed

- As we go to press, collaborative work is in progress to make Afyadata and EMA-i interoperable

EMA-i is a data collection app developed by FAO to facilitate real-time disease reporting to support veterinary services capacities in disease surveillance implemented in the field. Using Smartphones, animal disease information is collected with EMA-i app from the field. These data, which are geo-referenced, are entered into the app. The app generates a report that is sent in real-time to the Global Animal Disease Information System (EMPRES-i) database where the information is safely stored. The data are verified and validated, and the submitter of the information can be contacted if necessary. All reports are also accessible through a mapping component of EMA-i which permits to visualize the location and epidemiological details of a disease event from the field (“near me”). In addition, EMPRES-i platform developed by FAO can serve as a tool for data analysis through charts, tables and maps. An early warning e-mail notification system is also in place for informing decision makers on a disease event. Crucially, the application allows for confidentiality of sensitive information. Only registered participants have access to their national data.

Upcoming events

The 7th East African Health and Scientific Conference will be held in Dar es Salaam Tanzania from March 27-29, 2019. The main theme of the conference is “Technology for health systems transformation and attainment of the UN-Sustainable Development Goals”.

To commemorate, celebrate and honor the life and legacy of the late Hon. Edward Moringe Sokoine (former Prime Minister of the United Republic of Tanzania), Sokoine University of Agriculture will share the generated

knowledge, innovations, solutions, and findings to the national and international scientific community through its scientific conference in Agriculture and Agribusiness from April 10-11, 2019.

SACIDS Foundation for One Health plans to participate in these events showcasing its research and training activities and application of digital tools in One Health participatory community-based disease surveillance.

Key Partners:

