



# TechnoHealth Surveillance Newsletter



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## Editorial address

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## From Editors' desk

Dear reader,

Welcome to Volume 2, Number 7 of the *TechnoHealth Surveillance*.

We report the recent initiatives by the Ministry of Agriculture, Livestock and Fisheries and the Southern African Centre for Infectious Disease Surveillance (SACIDS) to join efforts to revolutionize animal disease surveillance system.

In this issue we highlight on field experience on the performance of *AfyaData* in supporting PhD research in the Kagera ecosystem in Tanzania.

We also share reflections from key stakeholders on the potential applicability of *AfyaData* to revolutionize disease surveillance in Africa.

In addition, we highlight on potential opportunity for SACIDS to collaborate with FAO to enhance disease surveillance.

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

Kindly do not hesitate to share with us stories on health related events occurring in humans, animals and environment which can be considered for publication in our newsletter.

Enjoy your reading!

## The Ministry of Agriculture, Livestock and Fisheries and the Southern African Centre for Infectious Disease Surveillance join hands to revolutionize animal disease surveillance

On July 5, 2017 a team of epidemiologists and Information Communication and Technologists from the Southern African Centre for Infectious Disease Surveillance (SACIDS) met with officials of the Ministry of Agriculture, Livestock and Fisheries (MoALF) at its headquarters in Dodoma, Tanzania. The aim was to introduce to the MoALF officials the SACIDS- Community-based Disease Outbreak Detection and Response in East and Southern Africa (DODRES) project aiming at strengthening diseases surveillance systems using a One Health approach.

Through financial support from the Skoll Global Threats Fund (SGTF), SACIDS is implementing DODRES project, which aims at promoting community level One Health security that will progressively contribute to disease detection and response at community level. Through the project, SACIDS has developed an open-source digital disease surveillance tool (branded as *AfyaData*) to enhance early detection, timely reporting and prompt response to health events in human and animal populations and environment. The tool is compatible with existing official disease surveillance systems in Tanzania and therefore has potential to complement national disease surveillance programmes.

SACIDS was represented in the meeting by Prof. Esron Karimuribo (DODRES project leader), Eng. Eric Beda (ICT Leader) and Dr. Calvin Sindato (Lead One Health Epidemiologist). The MoALF was represented by Dr. Abdul Hayghaimo (Director of Veterinary Services, DVS), Dr. Emmanuel Swai (National Veterinary Epidemiologist), Dr. Martin Ruheta (Assistant Director-Vector and Parasitic Diseases Control), Dr. Hamza A. Mwamhehe (Deputy Registrar - Veterinary Council of Tanzania), Drs. Benezeth Lutege, Severin Assenga, Stanford B. Ndibalema and Michael Madege (Directorate of Veterinary Services).

During the meeting, an overview of DODRES project, implementation strategies and proposed areas of collaboration with MoALF were shared. Demonstration was conducted on the performance of *AfyaData* on general and specific disease surveillance. Strategic plan was shared with the ministry officials on the rolling out plan of *AfyaData* to support community-based and official animal disease surveillance in Kilosa, Malinyi and Ulanga districts in Morogoro region, with ambition to expand the project to the national scale. Experience and animal disease surveillance challenges in disease surveillance in Kilosa, Ulanga and Malinyi were also shared.

The performance of the current animal disease surveillance system in Tanzania was discussed. The challenges facing this system, which is 95% paper-based, included delayed detection, reporting and response to animal health events, underreporting of health events which was estimated at 90%, remoteness of data source locations/communities, incompleteness of reports/data, delayed submission of reports, poor communication among communities, institutions and sectors responsible for animal and human health, cost of report submission to higher levels, inadequate feedback and response, limited information infrastructure to support data flow from community to district and national levels. In addition, the current surveillance system is not structured to capture data timely on wildlife diseases contributing to delayed response to events of animal and public health importance. A technology that could provide timely access to data by all relevant authorities was recommended.

The MoALF officials acknowledged the setup of DODRES project, rolling out strategies and functionality of *AfyaData* with its potential to support community-based and official disease reporting systems in Tanzania. The tool was perceived to have the potential of enhancing timely capture of data to

inform prompt decision making process. The MoALF officials were of the opinion that *AfyaData* has potential to foster collaboration between animal and human health sectors on its One Health and participatory approaches. The potentiality of *AfyaData* to integrate data from multiple data-sources and its compatibility with other disease surveillance systems was highlighted as an important attribute of the system. It was highlighted that the MoALF shares data with multiple stakeholders and the potential for *AfyaData* enhancing data flow and access was underscored.

The MoALF expressed its readiness to work and collaborate with SACIDS to strengthen disease surveillance systems in the country. The DVS presented the SACIDS–DODRES team with the English and Kiswahili copies of the national guidelines/ template of disease surveillance to serve as references during the process of digitization of disease surveillance system.

As we go to press, planning is underway to strengthen the national animal disease surveillance system allowing for collaborations with other key stakeholders. The system will be digitized using the *AfyaData* and deployed to support animal disease surveillance system in the country.



## AfyaData saved my time and money....

“.....earlier this year (2017), I became aware of AfyaData when I shared my research plan with a colleague at the Sokoine University of Agriculture. I then consulted the TechnoHealth Innovation team from the SACIDS, working with the community-based Disease Outbreak Detection and Response in East and Southern Africa project, to explore the possibility of using AfyaData in my research work. The team demonstrated to me the AfyaData functionality and installed it into three smartphones together with digitized data collection forms for my PhD research work. I then proceeded to Kagera where I trained field assistants to use AfyaData for my research that involved collection of data on brucellosis from human and animal populations in Karagwe and Ngara districts, from June 14 to July 12, 2017”.

In the field, I found AfyaData being simple and quick to enhancing data collection exercise. I could run data collection excise

concurrently in the three study sites serving me time by two-fold the time I would have used to collect data using paper-based approach. In simple terms the time it took to complete administering face to face questionnaire using AfyaData was half the time of paper-based approach making it possible to complete my research work within 30 days instead of 60 days, which I found to be substantial amount of time served.

In addition, AfyaData served my money in a number of ways. First, my living cost in the field and payments to research assistants was cut by 50%. In addition, I did not carry a box of questionnaire with me to the study sites as all my questionnaires had been installed in the phones, serving me the baggage charge in the buses to and from the study sites. AfyaData being configured to collect geographical coordinates, and perform data summarization and visualization, all automatically, was a very important and



*unique support to my study. In addition, it was very convenient for data collectors to not having a lot to carry with them along during the data collection exercise.*

*Data collected were submitted promptly to a server system at Sokoine University of Agriculture, making my data well secured. I could access the submitted data at a convenient time, visualize and monitor the trend of data collection exercise completion over space and time. I could examine the quality of collected data close-to-real time while in the field, and this made it possible to rectify some issues/errors immediately.*

*No data entry was needed; the system served me about 30 days of data entry and money if I would hire data entry clerks for this purpose. In addition, the system kept me free from data entry errors. Furthermore, I could keep to analyzing my data while in the field. These were remarks from Jean-Bosco Ntirandekura, a PhD student at SUA, when he was sharing with DODRES team his experience on AfyaData in the field.*

Jean-Bosco Ntirandekura is an Assistant Lecturer at the University of Burundi, Faculty of Agronomy and Bioengineering, Department of Animal Health and Productions. He is currently undertaking his PhD study at the Sokoine University of Agriculture, Morogoro Tanzania. His research work is on the epidemiology of brucellosis, a disease transmissible between animals and humans, in the Kagera ecosystem in Tanzania characterized by interaction between domestic and wild animals and humans.

AfyaData is an open source digital disease surveillance tool developed by the Southern African Centre for Infectious Disease Surveillance. 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 health officials. 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.



Research assistant (left) undertaking training on the use of AfyaData in Karagwe Tanzania

*“AfyaData being configured to support multiple languages was an invaluable to me and my study team. I constructed the questions for my research in English, and the AfyaData system supported translation of the questions to Kiswahili, which was a language the field assistants were most confident with. Myself I am not fluent in Kiswahili, but so in French and English. AfyaData supported translating the questions and recoded responses from Kiswahili back to English. In this regard, the system also served me the cost for translation of questions and responses, which I estimate to be around US\$ 350. In addition, I evaded the errors which could*

have occurred during the translation process”, Bosco said.

“Use of AfyaData in the field was however not without challenges. I found that field assistants with primary school level of education (seven years in school) needed more training time compared with those with higher level of education. The use of AfyaData was simple for individuals who had ever used smartphones before compared to their counterparts who had

never used smartphones. Although the phone battery could sustain me a day long, a power bank or solar charger may be needed in locations without electricity. Network coverage was challenging in most of the places where I collected data. However, the AfyaData system supported data collection offline and data were submitted to the server system when the data collectors accessed locations with internet”, he added.

## AfyaData at the forefront to revolutionize disease surveillance in Africa

“African Heads of State and Government at the recent (July 4, 2017) Africa Union summit issued a declaration to accelerate the implementation of International Health Regulations. The Declaration together with the Africa Health Strategy (2016-2030) and Agenda 2063 - the Africa we want, offers a unique opportunity for a new public health order in Africa to safeguard the health security of the continent. This is the dawn of a new era for a multi-sectoral approach, private sector partnerships, and enhanced coordination of partners’ efforts through country leadership, innovation, and continuous political commitment. Disease threats anywhere in Africa are disease threats everywhere on the continent, so we need to work in a network to address public health threats on the continent.” These were the remarks from Dr. John Nkengasong, the Director of the Africa Centers for Disease Control and Prevention (Africa CDC) during the Africa CDC meeting held in Lusaka, Zambia on July 20-21, 2017.

The meeting in Zambia was preceded by the meeting in Nairobi, Kenya on July 13-

14, 2017 and followed by a meeting in Gabon on July 27-28, 2017. The aim of these meetings was to operationalize the Africa CDC Regional Collaborating Centers (RCC) to improve surveillance, emergency response and prevention of communicable and non-communicable diseases. In addition, the meetings aimed at discussing the governing structure and framework of collaboration and networking to enhance public health practice in the Central Africa sub-region.

The Southern African Centre for Infectious Disease Surveillance (SACIDS) was represented, as an African Centre of Excellence for Infectious Diseases of Humans and Animals in Eastern and Southern Africa (SACIDS-ACE) at these meetings by Professor Mark Rweyemamu (Executive Director, SACIDS) in Nairobi, by Professor Gerald Misinzo, (the SACIDS-ACE Leader) and Eng. Eric Beda (the SACIDS Regional Information, Communication and Technology Specialist) in Lusaka Zambia and by Eng. Eric Beda in Libreville, Gabon.

During the meetings, SACIDS had an opportunity to share its strategic One Health and participatory approaches to harness innovation in science and technology to improve sub-Saharan Africa's capacity to detect, identify and monitor infectious diseases of humans, animals, ecosystems and their interactions in order to better manage the risk posed by them. In addition, SACIDS showcased and

demonstrated the functionality of *AfyaData*, an open-source digital mobile technology tool developed to support disease surveillance systems using One Health approach.

Upon demonstration of utilities of the *AfyaData*, the Africa CDC expressed interest in this platform as potential tool to revolutionize disease surveillance in Africa.



Participants of the Africa CDC meeting in Lusaka, Zambia



## Potential opportunity to collaborate with FAO to enhance disease surveillance

On July 27, 2017 the Food and Agriculture Organization of the United Nations (FAO) country representation team led by Mr Fred Kafeero, the FAO County Representative in Tanzania visited the Sokoine University of Agriculture in Morogoro Tanzania. The visit provided opportunity for the Southern African Centre for Infectious Disease Surveillance (SACIDS) to showcase performance of *AfyaData*. Delegates from FAO appreciated the configuration of *AfyaData* and its performance on various strands including enhancing surveillance of strictly human diseases, strictly animal diseases, shared diseases (zoonoses-diseases transmissible between animals and humans), and

specific disease active surveillance/vertical systems. Based on its potential to be configured to support various surveillance needs across human and animal health sectors, *AfyaData* was recommended for wider deployment in Africa. Demonstration of the functionality of *AfyaData* provided potential opportunity to work together with the FAO in collaboration with the Ministry of Agriculture, Livestock and Fisheries, in the near future to enhance disease surveillance activities. Identification of the areas where Tanzania and other member state countries could benefit from *AfyaData* technology was recommended.



### Key Partners:

