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Editorial address

TechnoHealth Surveillance Newsletter
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From the Editor's Desk

Dear reader,

The Editorial Committee welcomes you to Volume 2, Number 11 of the *TechnoHealth Surveillance*.

We are delighted to have developed a training manual for animal health surveillance, which is described in this issue.

Kindly find in this issue how SACIDS has expanded further its workforce on the use of digital technology in disease surveillance.

The Ministry of Livestock and Fisheries collaborated with the Southern African Centre for Infectious Diseases Surveillance and Food and Agriculture Organization of the United Nations to strengthen surveillance of animal health events, which is highlighted in this issue.

We look forward to your feedback and comments on this and other issues of *TechnoHealth Surveillance*. Kindly do not hesitate to share with us stories on health related events occurring in humans, animals and environment for the sustainability of our newsletter.

We wish you a happy reading.

Enjoy your reading!

SACIDS develops training manual for animal health surveillance

Through the *Enhancing Community-based Disease Outbreak Detection and Response in East and Southern Africa (DODRES)* Project supported by Skoll Global Threats Fund (SGTF), the Southern African Centre for Infectious Disease Surveillance (SACIDS) has developed a training manual to support animal health surveillance.

The manual describes the salient clinical manifestations and standard case definitions of priority animal diseases including the trade-sensitive diseases and those transmissible between animals and humans.

In addition, the manual contains the variables of surveillance forms for specific animal health events including abattoir report, animal movement permit, immediate/follow-up, outbreak reporting, institutional research report, large farms report, rumors log book, veterinary facility report, and weekly report forms.

The training manual describes ethical consideration during the provision of animal health care services, and collection and submission of animal health data to relevant authorities. In addition, prevention and control measures for each priority animal disease have been included in the training manual.

The priority animal diseases described in the manual include Peste des petits ruminants, Contagious Caprine Pleuropneumonia, Contagious Bovine Pleuropneumonia, Foot and Mouth Disease, Malignant Catarrhal fever, Lumpy Skin Disease and African swine fever. Others include Rift Valley fever, Brucellosis, Trypanosomosis, Newcastle Disease, Anthrax, Rabies and Avian Influenza.

The application *AfyaData,* to enhance early detection, timely reporting and prompt response to animal health events including disease outbreaks is described in the training manual.

Furthermore, the application and usefulness of *WhatsApp* to facilitate active exchange of information, experience, questions and responses between key stakeholders responsible for animal health surveillance in near real-time to address animal health-related challenges is described.

SACIDS supports use of digital technology in animal disease surveillance

It is well recognized that a well-functioning surveillance system requires timely availability of relevant data to make informed decision for effective prevention and control of diseases. Recognizing the need to strengthen disease surveillance system to enhance early detection, timely reporting and prompt response to animal-related health events, SACIDS has expanded further the deployment of digital tools in Tanzania.

From October 31 to November 7, 2017, SACIDS through DODRES project conducted trainings on the application of digital technology in the surveillance of animal health events. The trainees were all Livestock Field Officers (LFOs) from Kilosa (47), Ulanga (15) and Malinyi (10) districts. Other trainees were the District Veterinary Officers (DVOs) from the respective districts.

Dr. Emanuel Lyimo, District Veterinary Officer-Ulanga District Council, highlighting the challenges associated with paper-based animal health surveillance system

Prof. Esron Karimuribo, the project leader (right), highlighting on DODRES project in Malinyi District Council

The trainings were officially opened and closed by the Executive Directors in the respective districts. In their opening remarks all the District Executive Directors acknowledged the support from SGTF through Sokoine University of Agriculture-SACIDS to transform the animal disease surveillance system from paper-based to digital system. They all were keenly waiting to see improvement in the capture, submission, management and sharing of animal health data within the district and higher levels in a timely fashion.

Mr. Yusuf Semuguruka, the Ulanga District Executive Director, providing opening remarks of the training on the use of digital technology in the surveillance of animal health events in Ulanga District Council

Mr. Noel Abel (standing), District Human Resources Officer in Kilosa District Council providing the opening remarks of the training on the use of digital technology in disease surveillance in Kilosa

Mr. Marcelin Ndimbwa, the Malinyi District Executive Director, providing opening remarks of the training on the use of digital technology in the surveillance of animal health events in Malinyi District Council

The training package included theory and practical sessions on the application of *AfyaData*, ethics and best practices during the provision of health care services, collection and submission of reports of animal health events to relevant authorities.

Prof. Esron Karimuribo, the project leader (right), handling over a desktop computer to Mr. Noel Abel, the District Human Resources Officer from Kilosa District Council. The third from right is Dr. Yuda Mgeni, the Kilosa District Veterinary Officer and the fourth is Dr. Calvin Sindato, One Health Epidemiologist from SACIDS.

Prof. Esron Karimuribo, the project leader (left), handling over desktop computer to Mr. Marcelin Ndimbwa, the Malinyi District Executive Director. The first from right is Dr. Ernest Okama, the Malinyi District Veterinary Officer and the third from right is Mr. Abisalom Gepson, the Head of Department of Agriculture, Livestock and Fisheries in Malinyi District Council .

All LFOs from the three districts were provided with smart phones installed with *AfyaData*. The paper-based data capture forms for livestock official surveillance system were digitized and installed in the smart phones. They included surveillance forms for abattoir report, animal movement permit, immediate/follow-up, outbreak reporting, institutional research report, large farms report, rumors log book, veterinary facility report, and weekly report. Participants were trained on how to use the digitized forms to capture and submit disease data to district level.

Mr. Abisalom Gepson (right), the Head of Department of Agriculture, Livestock and Fisheries, Malinyi District Council acknowledging the receipt of the three working equipment, namely a desktop computer, smartphones installed with *AfyaData* and internet adaptor, and highlighting on how they will be used to enhance surveillance of animal health related events in the district.

The offices of the DVOs were supported with desktop computers powered with internet adaptor to facilitate data access, management and sharing with relevant authorities to inform prompt decision on disease control and prevention strategies. A similar support is being provided to the headquarters of the Ministry of Livestock and Fisheries. In addition, a trainees *WhatsApp* group network was established to facilitate sharing of experience, challenges and solutions.

Mr. Godluck Akyo (middle) demonstrating to disease surveillance officers from Ulanga District Council the use of *AfyaData* in the visualization, exploration and sharing of animal health events

The SACIDS ICT team of programmers resolving a technical challenge reported on *AfyaData* by trainees from Ulanga District Council. From left; Eng. Eric Beda, Mr. Godluck Akyoo, Mr. Renfrid Ngolongolo and Mr. Mpoki Mwabukusi

All trainees were provided with certificates of participation. SACIDS's plan within the next one month is to conduct training on the use of digital technology in disease surveillance for the officials from human health sector, wildlife and community health reporters from Kilosa.

Ministry of Livestock and Fisheries collaborates with SACIDS and FAO to strengthen animal disease surveillance

The impact posed by emerging and re-emerging pandemic threats calls for the need to strengthen capacity for disease surveillance and response. A need was recognized to strengthen animal disease surveillance system in Tanzania, in particular to enhance early detection, timely reporting and prompt response to animal-related events in the animal populations and their environment. In line with the mission to have a sustainable surveillance system that is capable of near-real-time detection, diagnosis and reporting disease outbreaks based on the World Health Organization for Animal Health standards; between June and November 2017 the Ministry of Livestock and Fisheries (MoLF) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) Emergency Centre for Transboundary Animal Diseases (ECTAD) in Tanzania and the Southern African Centre for Infectious Disease Surveillance (SACIDS) conducted consultative meetings and workshops with key stakeholders. The aim was to identify gaps/challenges facing the animal disease surveillance system and to propose solutions to enhance early detection, timely reporting and prompt response and long term strategic management of animal diseases. The key stakeholders consulted included District Veterinary Officers, Livestock Field Officers, livestock keepers and community leaders from selected districts in Tanzania. Others were the epidemiologists from the Directorate of Veterinary Services, Regional Veterinary Officers and Veterinary Officers from Zonal Veterinary Investigation Centre, Tanzania Veterinary Laboratory Agency and data managers/analysts.

The key areas of the surveillance system and tools identified for improvement included;

- customizing tool variables to reflect Tanzanian context, engagement of community
- sensitization and training of disease reporting agents at grassroots levels
- improving the geographical coverage of the passive surveillance system
- participatory approach in disease surveillance
- timely collection of geo-reference data
- integration of data from multiple sources
- timely submission and access of data and response

As we go to press, the *Event Mobile Application (EMA-i)* and *AfyaData* are being introduced to the national disease surveillance system to improve surveillance of animal health events at various levels. The future plans include integrating data collected through *AfyaData* and *EMA-i*, training for the new *EMA-i* and *AfyaData* users, improving, customizing and configuring tool variables in compliancy to Tanzanian context. Other future plans include developing standard operating procedures and operationalizing use of digital surveillance tools in Tanzania, and

continuous monitoring and evaluating tools performances at various levels.

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 markers 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.*

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.

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