TechnoHealth Surveillance

Newsletter

Editorial Committee

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From Editors' desk

Dear reader,

The Editorial Committee welcomes you to Volume 3, Number 6 of the *TechnoHealth Surveillance.* In this issue, we share the following:

- The Southern African Centre for Infectious Diseases Surveillance (SACIDS) has joined global efforts in the fight against Ebola Virus disease outbreak in the Democratic Republic of Congo;

- SACIDS continues to document remarkable outputs from participatory community-based disease surveillance initiatives; and

- The participation of SACIDS in the 5th International One Health Congress held in Saskatoon, Canada on June 22 – 25, 2018.

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!

SACIDS joins global efforts in response to Ebola outbreak in DRC

On May 8, 2018, the Ministry of Health (MOH) of Democratic Republic of the Congo (DRC) declared an outbreak of Ebola Virus Disease (EVD) in Bikoro Health Zone, Equateur Province. To complement the global efforts on active surveillance activities, the Southern African Centre for Infectious Disease Surveillance (SACIDS) based at the Sokoine University of Agriculture (SUA) dispatched a team of two Information and Communication Technology (ICT) experts to introduce *AfyaData* (DRC) to enhance early detection, timely reporting and prompt response to EVD.

From June 14-27, 2018 Eng. Eric Beda and Mr. Renfrid Ngolongolo from SACIDS were in DRC to participate in global response to EVD outbreak by introducing *AfyaData* and its utility. The team liaised with the National Institute of Biomedical Research (INRB) to setup an *AfyaData* resource hub, training of trainers, digitization of various surveillance forms to be used in EVD monitoring and evaluation, and public and government engagement on utility of *AfyaData*.

Activities carried out during the period included training of 10 trainers comprised of ICT specialists, data clerks and epidemiologists. Training centered around four main topics (a) Digital surveillance (b) Digitizing forms (c) Data collection using *AfyaData* mobile app (d) Uploading forms and Managing users and collected data.

AfyaData and its utility was also introduced to Chief Medical Officers of health zones from throughout the country, and trainees of field epidemiology. In addition, *AfyaData* was introduced to the Ministry of Health surveillance team.

The *AfyaData* was perceived as useful application for enhancing early reporting of clinical manifestations suggestive of EVD at community level. In addition, the tool was found to reduce the workload and other challenges associated with paper-based system. As we go to press, plans are underway to deploy *AfyaData* at community level in DRC to enhance event-based surveillance.

Figure 1: Initial setting up of the strategy on the training and deployment of AfyaData *with the Head of Surveillance Division in DRC Dr. Gisele Mbuyi*

Figure 2: Training on digitization of disease surveillance forms in DRC by the SACIDS team

Ending Pandemics

IDRC * CRDI

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 disease surveillance 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 tool 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.

Event based surveillance

The fact that disease outbreaks typically erupt at community level suggests that community is at the frontline position in the detection of unusual health events. Engagement of local communities in disease surveillance has potential to enhance timely detection of disease events occurring at the community level, ultimately complementing the national disease surveillance systems.

The Southern African Centre for Infectious Disease Surveillance (SACIDS) has been implementing participatory One Health community-based disease surveillance to enhance early detection, timely submission and prompt feedback/ response to health events in human and animal populations using *AfyaData* in different areas in Tanzania.

This programme is being implemented through the Enhancing Community-based Disease Outbreak Detection and Response in East and Southern Africa

(DODRES) project supported by the Ending Pandemics.

In Tanzania, *AfyaData* has been deployed in Ngorongoro, Morogoro-Urban, Kilosa, Malinyi, Ulanga, Mvomero, Kinondoni and Temeke districts. In this issue, we report clinical manifestations and potential probable diseases/ conditions that have been reported by CHRs from Kilosa, Ulanga, Ngorongoro and Morogoro from January to June 2018, and potential likely disease conditions as identified by One Health Knowledge Repository (OHKR).

Overall, from January to June 2018, a total of 1,805 livestock cases were reported by CHRs from a total population of 6,099 animals. Of the 1,805 cases, 738 animals died translating to a livestock population morbidity rate and case fatality rate (CFR) of 30% and 41%, respectively.

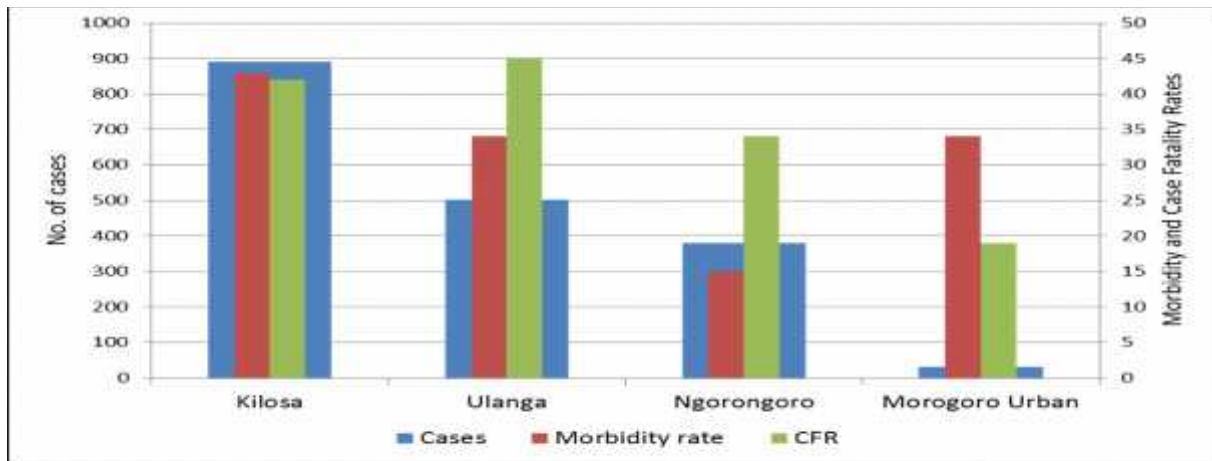Ending Pandemics   IDRC ✳ CRDI

Figure 1: Number of animal cases and associated morbidity and case fatality rates reported in Kilosa, Ulanga, Ngorongoro and Morogoro Urban from January to June 2018

The highest morbidity rate (43%) was recorded in Kilosa and highest CFR (45%) in Ulanga (Figure 1). Largest proportion of cases (41%) was reported in May (Figure 2).

Overall, animals aged < 1 year old represented over half of the cases (54%, N=1,805) and deaths (57%, N=738). The morbidity rate and CFR in animals aged < 1 year was 39% and 43%, respectively, and the morbidity rate and CFR in animals aged ≥ 1 year was 23% and 38%, respectively.

During the period, majority (907) of cases were reported in chicken, followed by sheep (303), goats (230) and cattle (108). Other cases were reported in dogs (94), ducks (64), pigs (62), donkeys (16), cats (8) and rabbits (1).

The clinical manifestations reported frequently in animals included being reluctant to move, sneezing, diarrhea, reduced eggs production, loss of appetite, fever and rapid breathing (Figure 3).
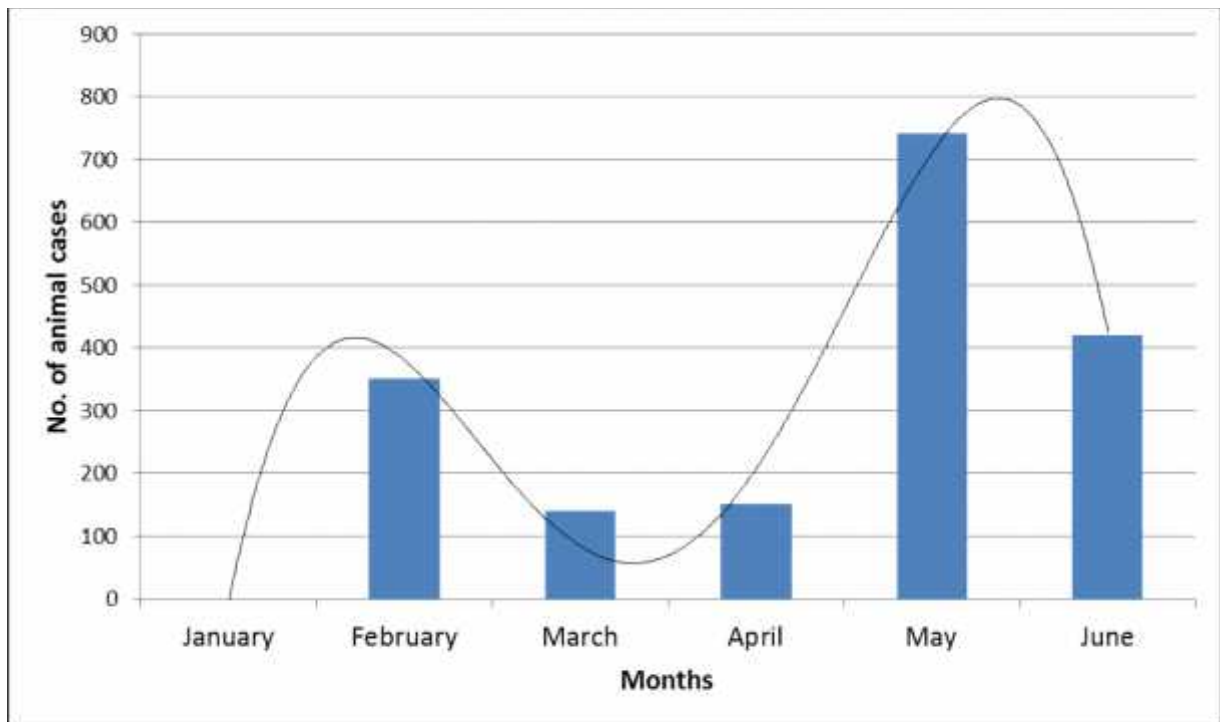
Figure 2: Trend of the number of animal cases reported in Kilosa, Ulanga, Ngorongoro and Morogoro Urban from January to June 2018

Based on the clinical manifestations reported, the most probable infectious conditions identified by OHKR and likelihood percentage (p) in chicken was New Castle Disease (70%), goats and sheep were Peste des Petits Ruminants (70%) and Contagious Caprine Pleural Pneumonia (70%). The most probable diseases in cattle included Foot and Mouth Disease (70%), Malignant Catarrhal Fever (60%), Contagious Bovine Pleural Pneumonia (70%), brucellosis (70%), Lumpy Skin Disease (50%), anthrax (50%) and Rift Valley fever (30%). The most probable disease in pigs was African Swine Fever (40%).
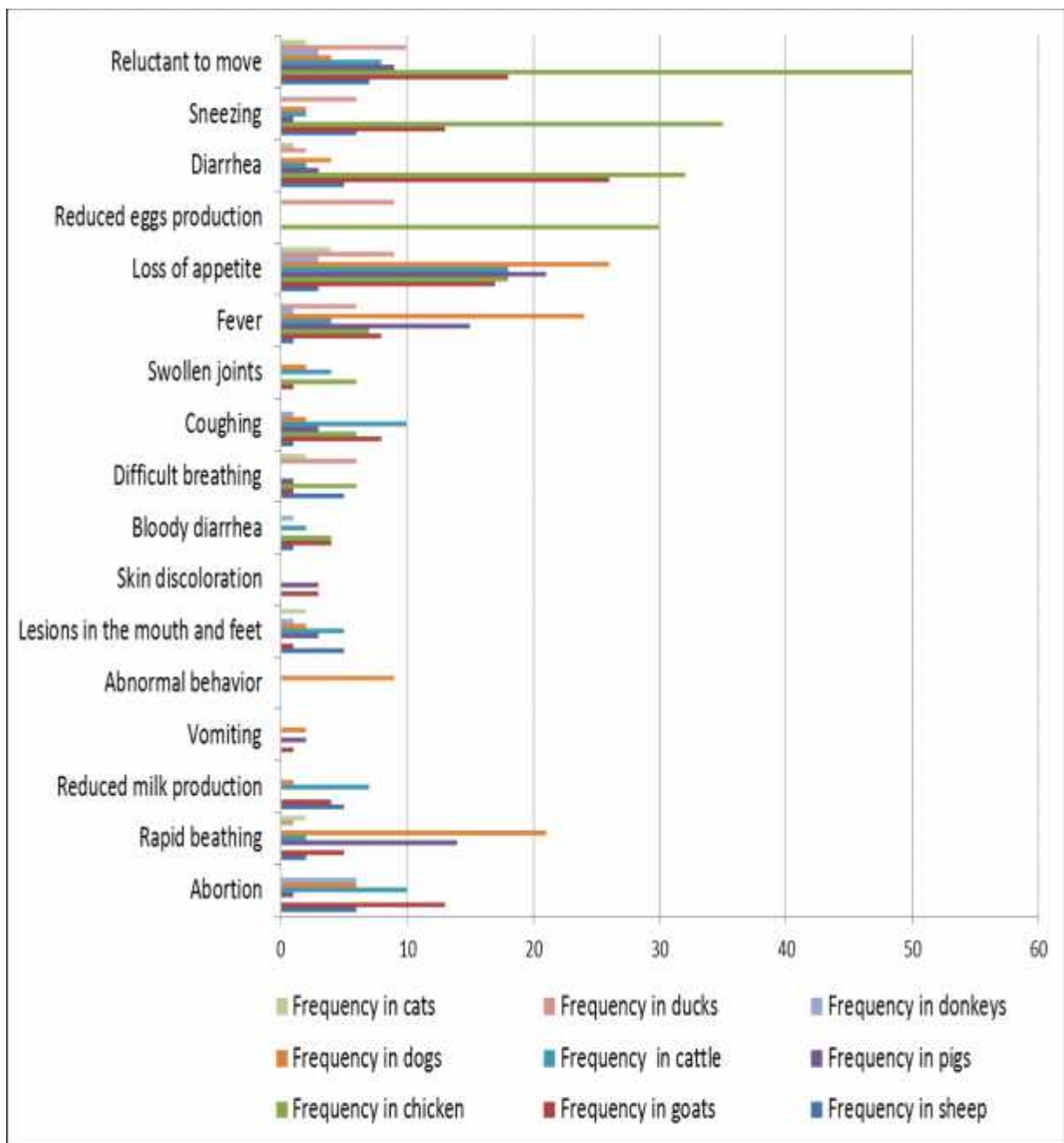
Figure 3: Clinical manifestations reported in animals in in Kilosa, Ulanga, Ngorongoro and Morogoro Urban from January to June 2018

From January to June 2018, a total of 1,102 cases (males=531; females=571) were reported among humans from Kilosa (823), Ulanga (218), Ngorongoro (48), Morogoro Urban (9), Malinyi (2) and Kibaha (2) districts. Overall, more than three-quarter (80%, N=1,102) of the cases were reported among individuals aged ≥5 years old. Larger number of cases were reported in May (274), February (232) and June (230) (Figure 4).

Clinical manifestations reported frequently in humans included headache, body weakness, coughing, loss of appetite, bloody diarrhea, vomiting, stomach ache, diarrhea and fever (Figure 5).

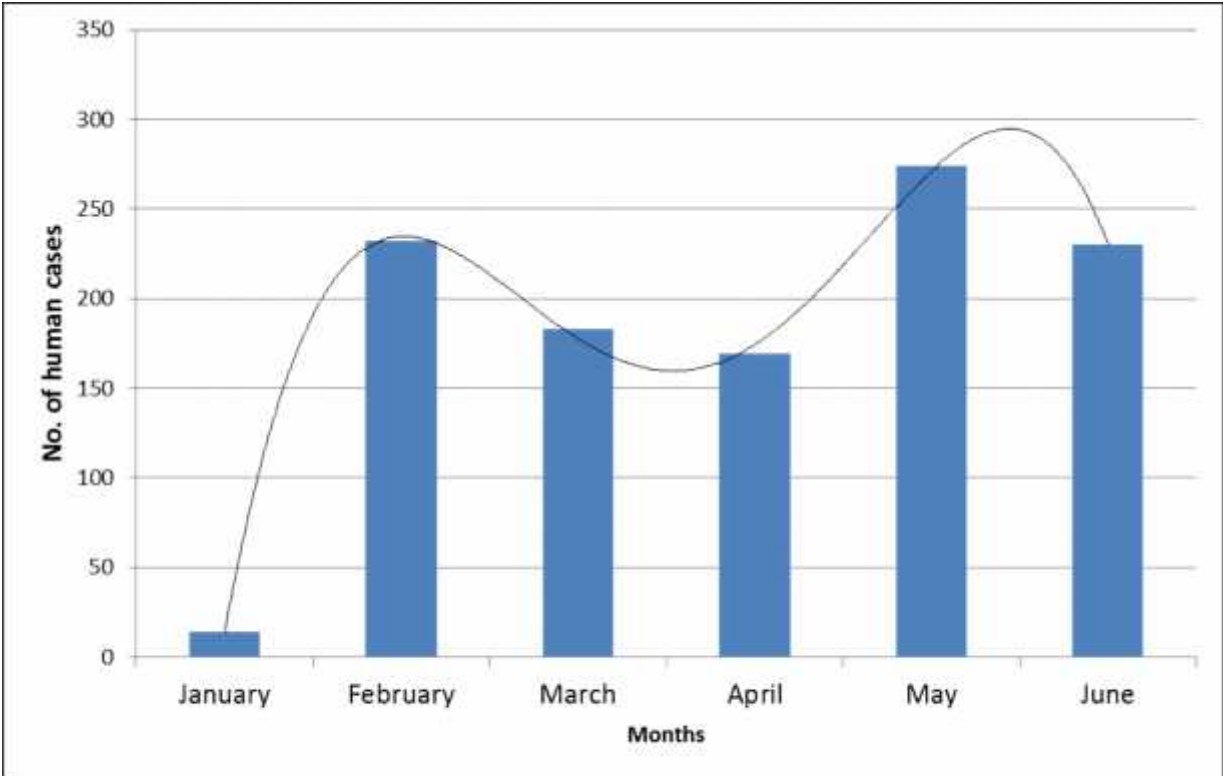The most probable infectious diseases in humans were cholera (60), typhoid fever (50%) and malaria (50%).

Figure 4: Trend of the number of human cases reported in Kilosa, Ulanga, Ngorongoro, Morogoro Urban and Kibaha from January to June 2018
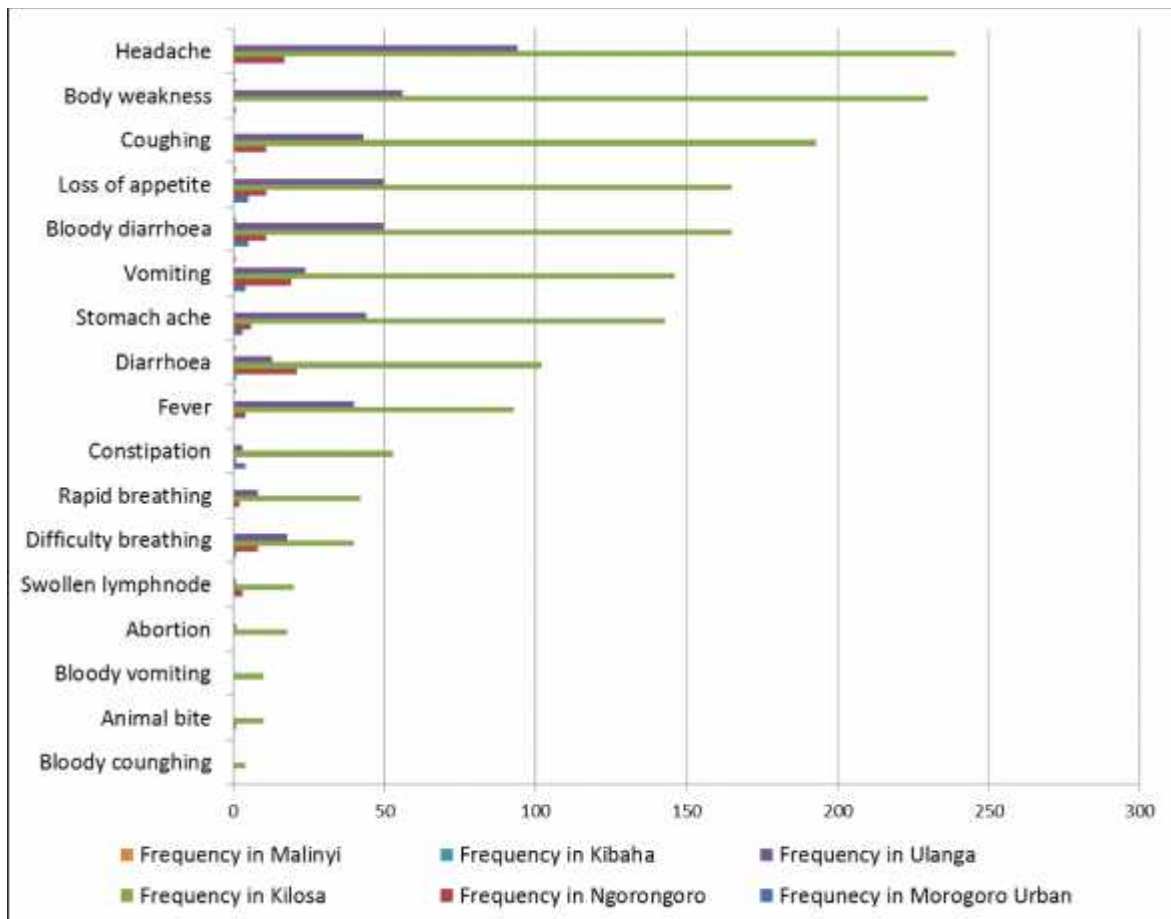
Figure 5: Clinical manifestations reported in humans in in Kilosa, Ulanga, Ngorongoro, Morogoro Urban and Kibaha from January to June 2018

SACIDS showcased its training and research activities in Canada

The 5th International One Health Congress was held in Saskatoon, Canada from June 22 – 25, 2018. The Congress was organized by the One Health Platform and the University of Saskatchewan, in partnership with the Southern African Centre for Infectious Disease Surveillance (SACIDS). During the event special attention was made on antimicrobial resistance, translational science, and recent advances in the fields of zoonoses and emerging infectious diseases. Profs. Mark Rweyemamu and

Esron Karimuribo represented SACIDS in the event. SACIDS showcased its training and research activities during the event, which included ten-year experience developing One Health capacity in Africa and Enhancing Community-based Disease Outbreak Detection and Response in East and Southern Africa. Other members from the Connecting Organizations for Regional Disease Surveillance (CORDS) networks were also present at the 5th International One Health Congress.

Key Partners: