TechnoHealth Surveillance

Newsletter

Volume1, Number 10

December 2016

Editorial address
TechnoHealth Surveillance Newsletter
Southern African Centre for Infectious Disease Surveillance,
Sokoine University of Agriculture
P.O. Box 3297
Chuo Kikuu, Morogoro,
Tanzania
E-mail:
onehealthnews@sacids.org

From Editors' desk

Dear esteemed reader,

We thank you for the opportunities you gave us in 2016 to share with you, through *TechnoHealth surveillance*, our strategies to enhance community-based participatory disease surveillance using digital technology. Thank you for all your feedbacks that have contributed to our improved performance. We are looking forward to a New Year 2017 filled with more work and opportunities to enhance community One Health security.

We are delighted to welcome you to the 10th edition of TechnoHealth surveillance. In this issue, we share with you the SACIDS strategies to support national cholera control efforts using Information, Communication and Technology (ICT) tools. We further share a story on changed behavior of baboons preying on livestock and humans which is suspected to be an effect of climate change.

We have continued receiving data on health events occurring in the community through Community Health Reporters (CHRs). We present in this issue the most probable diseases in human and livestock populations that have been identified using One Health Knowledge Repository based on the information submitted by CHRs.

SACIDS has recently shared with stakeholders the application of ICT tools in community-based participatory disease surveillance which is presented in this issue.

We would like to share with you the international upcoming event that SACIDS plans to showcase its innovative ideas to strengthen community-based participatory disease surveillance.

We keep to looking forward to your feedback and comments on this 10th edition. 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 a Happy New Year as you enjoy reading this issue!

Enjoy your reading!

skoll global threats fund
IDRC CRDI

SACIDS trains stakeholders on the use of ICT tools in cholera surveillance

The Southern African Centre for Infectious Disease Surveillance (SACIDS) through *"Enhancing community-based disease outbreak detection and response in East and Southern Africa (DODRES)"* project has trained stakeholders on the use of Information, Communication and Technology (ICT) tools to support national cholera control efforts. The training was conducted in Morogoro on November 7-8, 2016 and in Dar es Salaam region–on November 10-11, 2016. A total of 53 stakeholders from the two regions were trained including 21 Community Health Reporters (CHRs), 12 Ward Health Officers, eight Laboratory Technicians, eight Clinical Officers and four District Medical Officers (DMOs).

The training package included theory and practical sessions on the application of ICT tools in the surveillance of cholera and cholera-like events at the community and health facility levels, ethics and best practices during the provision of health care services, collection and submission of reports on health events to relevant authorities.

Stakeholders attending training in Dar es Salaam

All trainees (with exception of DMOs and Clinical Officers) were provided with android phones installed with *AfyaData* which is a digital disease surveillance tool. All CHRs and Ward Health Officers were trained on how to refer patients to health care facilities and were provided with referral forms. In addition, the trainees-specialist WhatsApp group network was established to facilitate sharing of experience, challenges and solutions.

SACIDS has also designed barcode system in the current cholera sample submission forms to facilitate prompt tracking of samples (using mobile phones) submitted from cholera treatment camp (CTC) to higher level laboratory for differential diagnosis. In addition, the digital system has been designed to support prompt sharing of the results between CTC, higher level laboratory and the DMO office.

Stakeholders attending training in Morogoro

Baboons prey on livestock and humans

On November 28, 2016 SACIDS researchers met with village leaders, Community Health Reporters, Livestock Field Officer and Medical Officer in Pinyinyi village in Ngorongoro district, Tanzania to discuss and monitor the performance of community-based participatory One Health disease surveillance that is being implemented in the district. The astonishing event that was reported during this meeting was the case of baboons preying on livestock and humans.

Baboons that were known for decades to consume cereals as their main food and live harmoniously with people in Pinyinyi have recently switched to prey on livestock and humans. Baboons were reported to have changed their feeding behavior during the times of severe droughts when cereal foods were scarce. However, with time baboons were not found to switching back to cereals even during the rainy season when there were plenty of crops. They were reported to invade mainly the flocks of sheep and goats and raid human dwellings at irregular times throughout the day. They were reported to attack in singles or troops of 2-15 animals. Upon attack, one baboon was reported to kill about 10 livestock and finally consume one. Sheep (all age groups) and children were reported to be the most vulnerable as they were less likely to escape the tragedy. Baboons were reported to have severely affected, and continuously harming, the residents' livelihood and safety as they attack people and livestock, and destroy crops in search of food.

Between August and November 2016, over 1,000 sheep and goats were reported to have been killed by baboons and many of survivors were left injured. Four humans were reported to have been injured as they managed to free themselves and one person survived with mental damage. It was highlighted further that the rising number of baboons in the area and their preying adaptation has potential to transmit diseases to humans and livestock.

Speaking with some villagers, they associated the baboons feed adaptation with climate change. They reported that baboons have lost fear of humans and becoming more aggressive, and therefore they were scared of letting their children herd livestock to grazing fields which was their tradition before. The village dwellers were of the opinion that all baboons in the village should be culled as a strategy to protect their livelihoods and safety. This event was reported the unit responsible for wildlife and natural resource management in Ngorongoro district. It was recommended by wildlife expert that investigation should be conducted to establish whether certain social groups of baboons have changed behavior to prey on livestock and humans to inform strategic control options.

A baboon

The potential diseases that can be transmitted from baboons to humans include rabies, hepatitis A, hepatitis B, amoebiasis, babesiosis, helminthosis, shigellosis, campylobacteriosis, ebola, salmonellosis, tuberculosis, syphilis, anaplasmosis, and rickettsial disease. Most of these diseases are spread through a bite or exposure to the saliva of baboon or their nasal secretions, and through exposure to their feces. Another potential health risk is bite wound infections including tetanus.

Most probable diseases in humans and livestock have been identified using OHKR

The Southern African Centre for Infectious Disease Surveillance (SACIDS) has developed One Health Knowledge Repository (OHKR). This is a database of expertly authored health content of priority infectious diseases of human and livestock. It includes fact sheets, standard case definitions, response protocols and recommendations and first aid advice from human and livestock health perspectives. The OHKR serves as a knowledge-based decision support tool to enhance early detection, timely reporting and prompt response to disease events including outbreaks. It works by creating automatic targeted intelligent responses on most likely disease conditions based on the information collected and submitted from community by Community Health Reporters (CHRs) using mobile phones installed with AfyaData which is a digital disease surveillance tool. In this issue, we report clinical manifestations that have been reported by CHRs from Ngorongoro and Morogoro Urban districts, and potential likely disease conditions as identified by OHKR.

From October to November 2016 the village that frequently reported clinical manifestations in livestock was Njoroi (38) followed by Pinyinyi (23), Jema (14), Kisangiro (11), Ololosokwan (8), Naan (6) and Digodigo (5), all in Ngorongoro. Overall, clinical manifestations were reported in 113 herd of livestock from 9/11 and 4/7 study villages in Ngorongoro and Morogoro Urban districts, respectively.

Clinical manifestations were frequently reported in flocks of goats (43%), herds of cattle (31%) and dogs (19%). They were also reported in flocks of sheep (4%), chicken (2%) and pigs (1%).

The frequently reported clinical manifestations in goats included coughing (42), reduced milk production (39), rapid breathing (38), frothy discharge from mouth (31), sneezing (28), nasal discharge (26), abortion (24),

difficulty breathing (24), and fever (24) (Figure 1).

Overall, the morbidity and Case Fatality rates were higher in livestock aged < five years than those aged ≥ five years. Clinical manifestations were reported in 1,170 (69%) goats from flocks with 1,696 goats aged < five years (morbidity rate = 69%) of which 341 died translating to Case Fatality Rate (CFR) of 29%. On the contrary, clinical manifestations were reported in 1,896 goats (20%) from flocks with 9,357 goats ≥ five years (morbidity rate = 20%) of which 367 died (CFR=19%).

Clinical manifestations reported in cattle included fever (22), coughing (21), nasal discharge (21) and frothy discharge from mouth (20) (Figure 1). These clinical manifestations were reported in 86 cattle from herds with 1,656 cattle aged < five years (morbidity rate= 5%), whereas for those aged ≥ five years (n=4,404) they were reported in 53 cattle (morbidity rate = 1%) of which four died (CFR=8%).

Clinical manifestations reported in dogs included abnormal behavior (13), nasal discharge (12) and discharge from eyes (12) (Figure 1). These clinical manifestations were reported in 24 dogs from households with 33 dogs aged < five years (morbidity rate= 73) of which seven died (CFR=29%). A morbidity rate of 13 % was recorded in households with 136 dogs aged ≥ five years of which 11 died (CFR=61%).

Overall, clinical manifestations were reported in 46 humans from 7/11 and 3/7 study villages in Ngorongoro and Morogoro Urban districts, respectively. The village that frequently reported clinical manifestations in humans was Kisangiro (27) followed by Ololosokwan (5) in Ngorongoro, and Kasanga (4) in Morogoro. Males represented over half (57%) of individuals who reported clinical manifestations in Ngorongoro and Morogoro. Individuals aged ≥ five years (64%) were more likely to report clinical manifestations compared with individuals aged < five years (36%).

The most frequently reported clinical manifestations in humans from Ngorongoro included coughing (17), headache (10), diarrhea (9) and fever (8). The most frequently reported clinical manifestations in humans from Morogoro included body weakness (4) and diarrhea (3) (Figure 2). Overall, coughing (n=19) was reported by almost equal proportion of males (53%) and females (47%). It was frequently reported in individuals aged < five years (63%, n=19) compared with those aged ≥ five years (37%). One-third (67%, n=12) of individuals who reported diarrhea were aged ≥ five years. Males represented larger proportion (58%) of individuals who reported diarrhea. There was no difference in the proportion of individuals who reported headache by sex or age. Almost all individuals who reported fever were females (89%, n=9), of which the majority (78%) were individuals aged < five years.

Based on the clinical manifestations reported, the most probable infectious conditions identified in goats by One Health Knowledge Repository (OHKR) and likelihood percentage (p) were Peste des Petits Ruminants (90%) and Contagious Caprine Pleural Pneumonia (80%). The most probable infectious diseases in cattle were Contagious Bovine Pleural Pneumonia (50%), brucellosis (50%) and anthrax (30%). The most probable disease in dogs was rabies (90%). The most probable infectious diseases in humans were

malaria (65%), cholera (60%) and anthrax (30%).

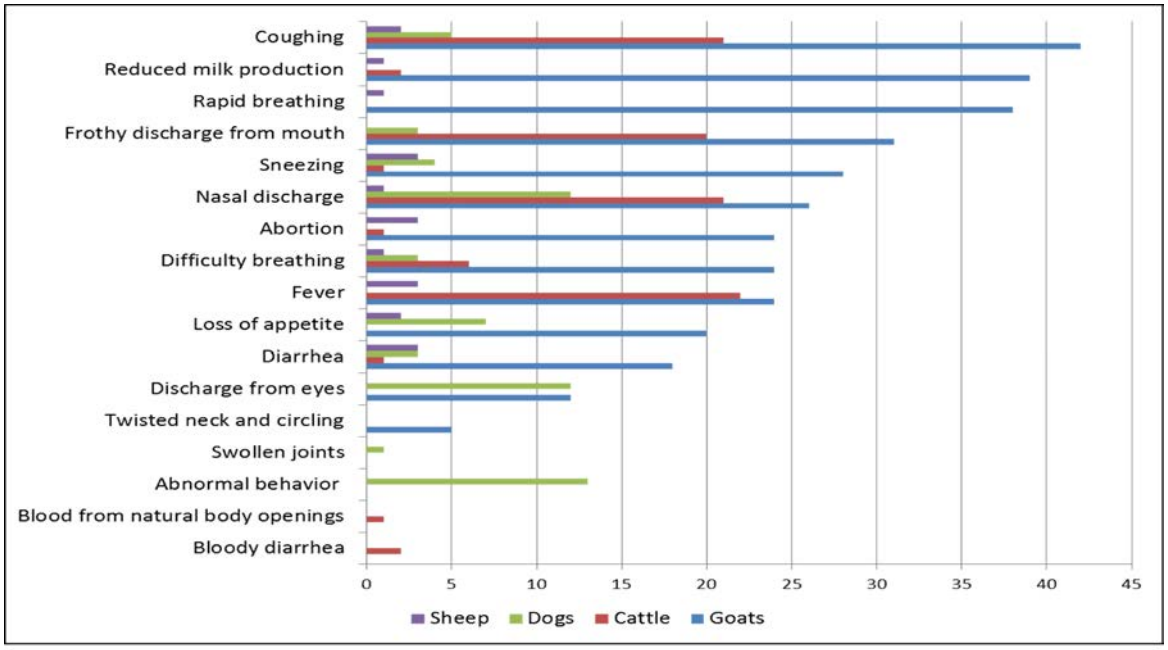

Figure 1: Clinical manifestations reported in livestock in Ngorongoro and Morogoro Urban districts

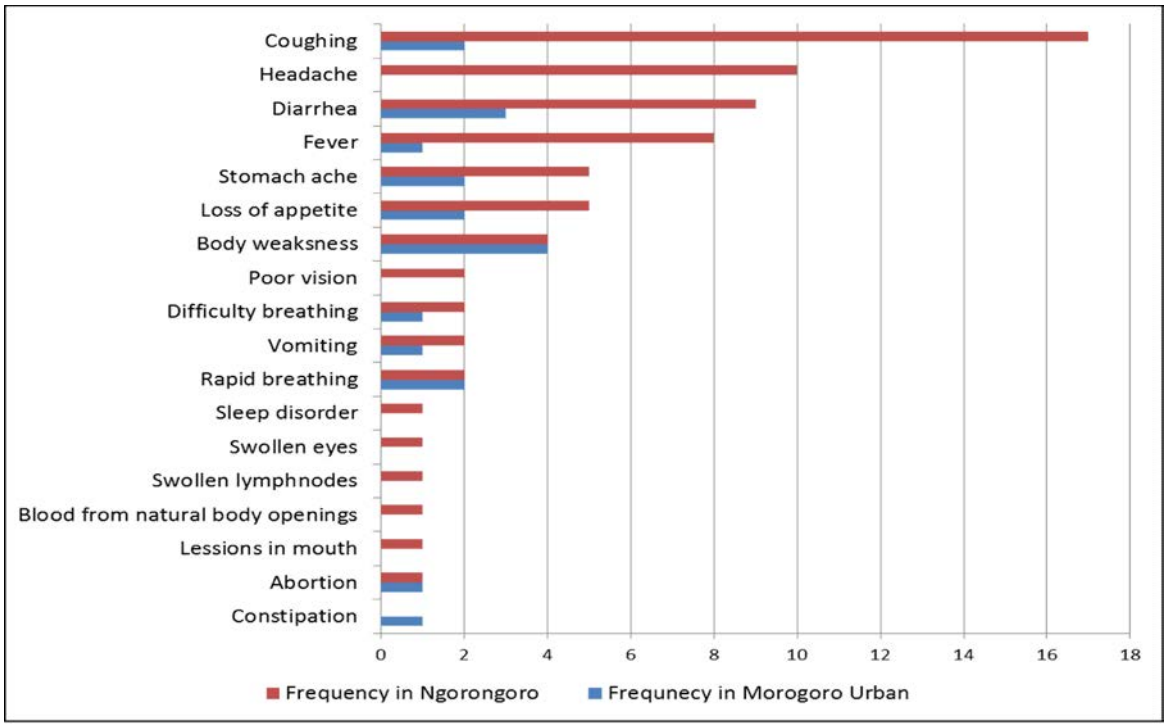

Figure 2: Clinical manifestations reported in humans in Ngorongoro and Morogoro Urban districts

SACIDS shares with stakeholders the application of ICT tools in disease surveillance

The 30th annual joint scientific conference of the National Institute for Medical Research was held on October 4-6, 2016 in Dar es Salaam, Tanzania. The conference theme was "Achieving the Sustainable Development Goals: Investing Innovative Research to fill the Critical Gaps". Drs Leonard E.G. Mboera and Calvin Sindato represented SACIDS in this meeting. The Tanzania Veterinary Association (TVA) held its 34th Annual Scientific Conference in Arusha, Tanzania on December 6-8, 2016. The theme for the conference was "Disease Control as the Main Driver for Improving Productivity and Livestock Market Access". The TVA conference was followed by a knowledge exchange workshop (organized by University of Glasgow) on zoonotic disease (disease transmitted between animals and humans) surveillance that was held in Arusha on November 9-10, 2016. The goal the workshop was to discuss on how to improve the current disease reporting system to enhance early detection and response to zoonotic disease. Messrs. Mpoki Mwabukusi and Godluck Akyoo represented SACIDS in these two events.

During these meetings SACIDS shared with conference delegates (from within and outside Tanzania) its experience in the development, deployment, and performance of Information, Communication and Technology (ICT) tools in participatory community-based One Health disease surveillance in East Africa. Application of ICT tools in disease surveillance is being implemented through "*Enhancing community-based disease outbreak detection and response in East and Southern Africa (DODRES)*" project to promote community level One Health security. The project is supported by the Skoll Global Threats Fund. The strategic approach has been implemented through empowering community-based human and animal health reporters with training and ICT-based solutions so that they can contribute to disease detection and response at community level and thence national, regional and global levels. The developed ICT tools are open source compatible with android mobile phones that support technical solution for near-to-real time data collection at community and health facility levels, submission to higher levels as well as provision of feedback to reporters.

In addition, SACIDS shared with conference delegates the establishment and application of "One Health Knowledge Repository" to provide health information on case definition of disease syndromes in people and animals, and synthesize advice that can be transmitted to Community Health Workers with advice "next step" response activities or intervention. Moreover, conference delegates had opportunity to learn "participatory selection and training of community health reporters (CHRs) and their integration and performance in the community-based participatory disease surveillance using One Health approach. Conference delegates appraised the potential usefulness of the developed ICT tools in participatory community-based disease surveillance to enhance early detection, timely reporting and prompt feedback in human and animal health sectors.

SACIDS ICT specialist, Mr. Mpoki Mwabukusi (right), demonstrating use of ICT tools in disease surveillance to the Director of Veterinary Services in Tanzania, Dr Abdu Hayghaimo (second from left), at the SACIDS exhibition pavilion during the TVA conference in Arusha

Upcoming event

6th East African Health and Scientific Conference, March 29-31, 2017. Bujumbura, Burundi

The 6th East African Health and Scientific Conference and International Health Exhibition and Trade Fair will be held in Bujumbura Burundi from March 29-31, 2017. The event will provide opportunity for participants to share research outputs and experience on preparedness and pandemics, the context of climate change, globalization and gaps in health systems.

Areas of focus are emerging, re-emerging infectious and zoonotic diseases, vaccines, diagnostics, and antimicrobial agents in control of communicable diseases, antimicrobial resistance. Other areas of focus are health systems in control of outbreaks, epidemics, and pandemics, occupational

health and safety, and climate change, and social mobilization for control of outbreaks, epidemics, and pandemics including engagement of community health workers in disease surveillance and response.

SACIDS plans to take active participation in this event showcasing how application of digital tools on One Health participatory community-based disease surveillance are contributing to early detection, timely reporting and prompt response to infectious diseases in human and animal populations. For more information about this event, visit http://eac.int/about/institutions/eahrc.

Key Partners: