



# TechnoHealth Surveillance Newsletter



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## Editorial address

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## From the Editor's Desk

Dear reader,

The Editorial Committee welcomes you to the 7<sup>th</sup> edition of *TechnoHealth surveillance*.

We are delighted to share with you the outputs from community-based participatory disease surveillance using digital technology. Kindly find in this issue how exploration of clinical manifestations reported by Community Health Reporters supported simulation of most probable infectious diseases affecting humans and animals.

We are pleased to report the findings of a gap analysis to understand and identify areas that SACIDS could support in the confirmation of and response to cholera and other cholera-like diarrheal diseases in Morogoro and Dar es Salaam regions of Tanzania.

SACIDS and its boundary partners have conducted outcome mapping on future intervention plans to improve disease control and prevention at community level, which is presented in this issue.

The reflections from our readers have been indeed encouraging. We keep to looking forward to your feedback and comments on this 7<sup>th</sup> 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 you an informative read!

*Enjoy your reading!*

## Exploration of clinical manifestations reported by CHRs supports simulation of most probable infectious diseases in humans and livestock

Through *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) is implementing participatory One Health community-based disease surveillance in Morogoro Urban and Ngorongoro districts in Tanzania, with ambition to expand the activity to other countries in the East and Southern African regions in the near future. In order to facilitate this endeavor, SACIDS has trained Community Health Reporters (CHRs) and other health stakeholders in the detection, recording and reporting of clinical manifestations of epidemic-prone human and livestock diseases using digital technology. In addition, stakeholders were trained on the prevention and control measures of diseases, and referral of patients to health care facilities. Trainees were drawn from seven study streets (herein after referred to as villages) in Morogoro Urban district namely Bigwa, Lukunju, Mgolole, Kasanga, Mgaza, Korogoso and Madaganya, and 11 study villages in Ngorongoro district, which were those close to, or located along, the Tanzania (Ngorongoro district)-Kenya (Narok county) border namely Ololosokwan, Njoroi, Mondorosi, Enguserosambu, Naan, Kisangiro, Jema, Pinyinyi, Soitisambu, Sukenya and Digodigo.

Following completion of the training of stakeholders in June and July 2016, the CHRs (seven from Morogoro and 22 from Ngorongoro) were provided with android phones installed with *AfyaData*, which is a SACIDS mobile phone digital surveillance tool designed for capturing and reporting of health events from the community to district levels. The collected data are submitted to the SACIDS server located at Sokoine University of Agriculture. SACIDS has also developed One Health Knowledge Repository (OHKR) which is a database of expertly authored health content of priority infectious diseases of human and livestock, and it includes guidelines, 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 outbreaks. It works by creating automatic targeted intelligent responses to key public health stakeholders and community based on the information collected and submitted from community by CHRs.

In this issue, we report clinical manifestations that have been reported by CHRs from the study sites in July and August 2016, and potential likely disease conditions as identified by OHKR.

Overall, clinical manifestations in livestock were reported from higher proportion of study villages in

Ngorongoro than in Morogoro; clinical manifestations were reported in livestock from six (55%, n=11) and two (29%, n=7) study villages in Ngorongoro and Morogoro, respectively. The study villages that frequently reported clinical manifestations in livestock included Pinyinyi (11), Kisangiro (9) and Jema (6), all in Ngorongoro.

Clinical manifestations in livestock from Ngorongoro were reported from 14 flocks of sheep, 13 herds of cattle, three flocks of chicken, one flock of sheep and one herd of donkey. Those reported in Morogoro were from one herd of pig and one flock of chicken. The frequently reported clinical manifestations in goats included coughing, diarrhoea and loss of appetite (8 each), sneezing (5) and fever (4) (Figure 1). Those in cattle included loss of appetite (10), fever (4) and discharge from eyes (4) (Figure 1).

Clinical manifestations in pigs were loss of appetite, frothy discharge from mouth, difficulty breathing, reluctant to move, fever and abortion. Chickens in Morogoro were presented with bloody diarrhea, and chickens in Ngorongoro experienced loss of appetite, reduced egg production, rapid breathing, sneezing and were reluctant to move. Sheep had experienced loss of appetite, diarrhea, loss of body hair and were reluctant to move. A donkey was also reported to have trouble in walking.

Overall, clinical manifestations were reported in humans from eight (72%, n=11) and five (71%, n=7) study villages in Morogoro and Ngorongoro, respectively. The villages that frequently reported

clinical manifestations in humans included Kisangiro (12), Mgaza (11), Jema (6) and Ololosokwan (5). The most frequently reported clinical manifestations in humans included headache (18), coughing (17), loss of appetite (16), body weakness (12), vomiting (10), diarrhoea (9) and fever (8) (Figure 2).

Based on the clinical manifestations reported, the most probable infectious conditions identified in humans by the One Health Knowledge Repository (OHKR) and likelihood percentage (p) were malaria (70%), typhoid fever (70%), cholera (60%), dengue fever (60%), rabies (50%), anthrax (50%) and Rift Valley fever (50%).

The most probable infectious diseases in cattle were Malignant Catarrhal Fever (70%), Contagious Bovine Pleural Pneumonia (60%), brucellosis (60%), Trypanosomiasis (60%), Foot and Mouth Disease (53%), Lumpy Skin Disease (50%), anthrax (45%) and Rift Valley fever (20%). The most probable infectious diseases in goats were Peste des Petits Ruminants (90%) and Contagious Caprine Pleural Pneumonia (60%). The most probable disease in chicken was Newcastle disease (70%), and in pig was African swine fever (20%). Our plan would be to include validation of performance of digital surveillance tool.

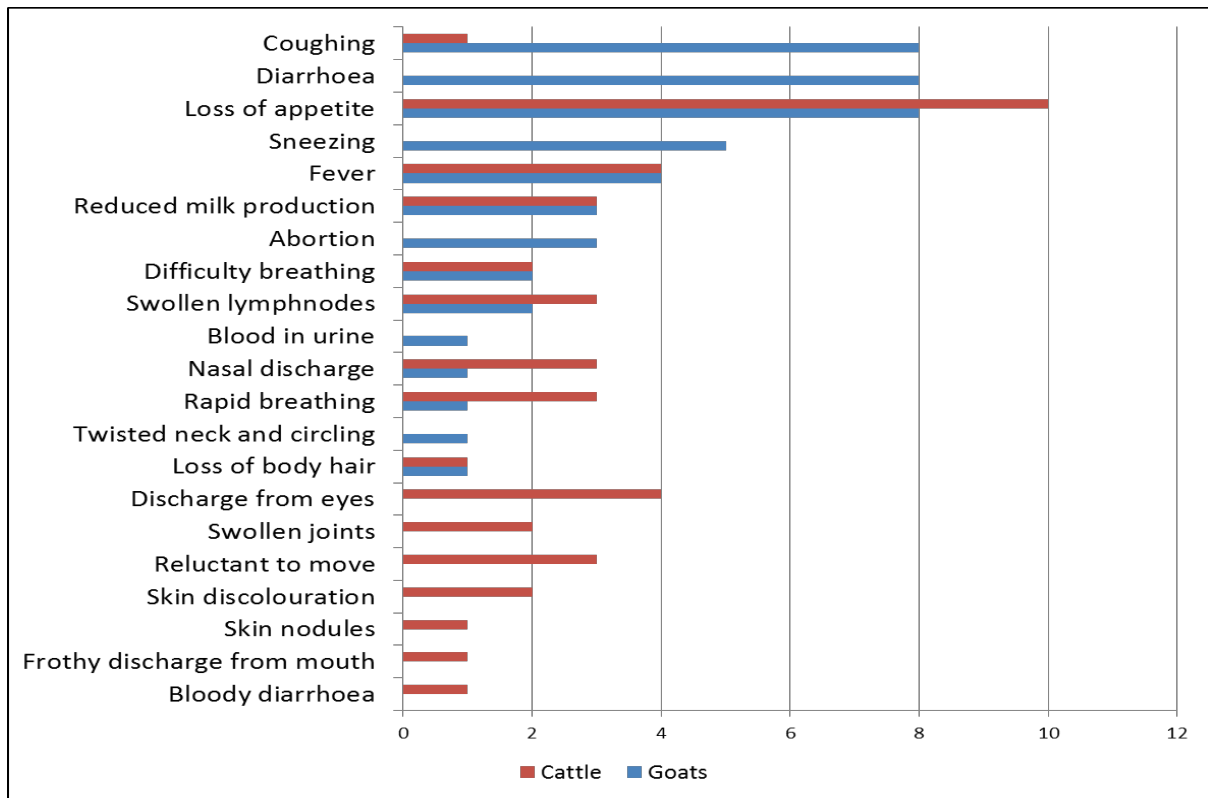


Figure 1: Clinical manifestations reported in goats and cattle in Ngorongoro district

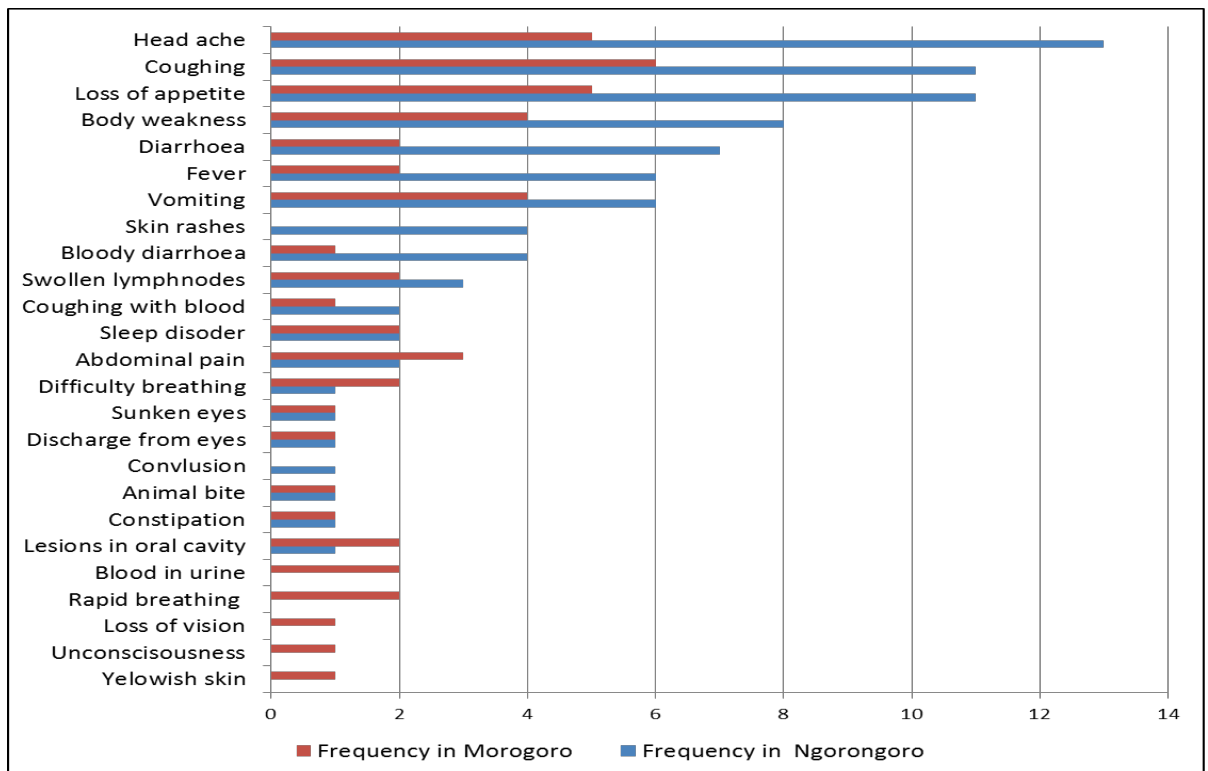


Figure 2: Clinical manifestations reported in humans in Ngorongoro and Morogoro Urban districts



## SACIDS through DODRES project plans to support laboratory confirmation of cholera cases

The Southern African Centre for Infectious Diseases Surveillance (SACIDS) has conducted analysis of gaps in order to understand and identify areas that could be supported by the DODRES project. This was achieved by conducting an in-depth interview of a laboratory technologist based at Morogoro Regional Referral Hospital facility who handles all samples from suspected cholera cases in the Morogoro region except for some remote areas of Mvomero hospital where samples are submitted to Bwagala Designated District Hospital. The interview focused on understanding the current challenges faced in the diagnosis of cholera and cholera-like diseases.

Some challenges faced by the laboratory were reported to include: inadequate manpower when there are many samples to handle during outbreak, submission of samples with incomplete information, delayed submission of samples reducing chances to isolate *Vibrio cholerae*, shortage of supplies especially containers for the transport medium (Cary-Blair) and double submission of samples from one patient which usually happens if the patient was sampled at local health facility and re-sampled at the CTC. At the beginning of cholera outbreaks in Morogoro, *Salmonella* and *Shigella* were included in the differential diagnosis of suspected cholera cases but currently this is no longer conducted.

In order to address those challenges, it was agreed:

- To support use of standardized sample submission form at CTC/facility.
- Use the existing diagnostic protocol and personnel at Morogoro Regional Referral Hospital diagnostic facility. The DODRES project will also supply more consumables and supplies to make sure that isolation and confirmation of *Vibrio cholerae* is carried out promptly and smoothly. This will also include supporting conducting antibiotic susceptibility testing of the *Vibrio* isolates.
- The National Institute for Medical Research (NIMR) laboratory facility, also based at the Morogoro Regional hospital, will provide additional support by performing advanced molecular characterization of isolated *Vibrio cholerae* and other enteric pathogens under differential diagnosis. These include bacterial pathogens such as *Salmonella*, *Campylobacter*, *Escherichia coli* and *Shigella* spp. using conventional bacteriological diagnostic approaches. Other support will be identification and quantification of viral enteric pathogens such as Adenovirus and Rotavirus species using real time polymerase chain reaction (PCR). The *Cryptosporidium* protozoan parasites will also be screened.
- The cholera support model agreed to support use of master register (as outlined in the TechnoHealth Surveillance newsletter issue #5) will be adopted.
- A similar approach for supporting Morogoro region will be used to support Dar es Salaam region using a national reference laboratory.



## SACIDS conducts outcome mapping with boundary partners

On August 30, 2016 the Southern African Centre for Infectious Disease Surveillance (SACIDS) research team met with the boundary partners in Karatu town, Arusha for its project 'Integrated human and animal disease control for Tanzanian pastoralists facing settlement'. This project is funded by the International Development Research Centre (IDRC) and being implemented in Ngorongoro, Kibaha and Bagamoyo districts in Tanzania.

The event brought together key partners including Ngorongoro District Executive Director, Ngorongoro Conservation Area Authority officials, Ngorongoro District Medical and Veterinary Officers, Pastoral Council officials, and Community Health Reporters. Outcome mapping was conducted on future intervention plans and recommendations were made on the framework that recognizes and upholds the participation of local communities in disease control and prevention. The areas of further research that were proposed included studies on connection between diseases in animals and humans, use of indigenous

knowledge to predict climate variability/change and its effects on occurrence of infectious diseases, and to assess improvement of community knowledge on diseases and control and prevention. Other areas of further research included studies on capacity of local traditional medicine to treat human and animal diseases, and impact of use and misuse of modern drugs on antimicrobial resistance.

In the next six months SACIDS plans to conduct trial and disease intervention activities in small ruminants including investigation on efficacy of vaccine against Contagious Caprine Pleuropneumonia (CCPP), which is a highly contagious and severe respiratory disease of goats, and immunization animals against Peste des petits ruminants (PPR), which is an acute or sub-acute viral disease of goats and sheep. In addition, SACIDS plans to conduct training of stakeholders on journalist skills and production of radio programs, spots and jingles, and finalize the process to establish community radio in Ngorongoro, a remote study site.



Participants of boundary partners meeting in Karatu, Arusha

# HIGHLIGHTS FROM THE BOUNDARY PARTNERS MEETING IN KARATU AND KIBAHA



## Key Partners:

