



TechnoHealth Surveillance Newsletter



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Editorial address

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From Editors' desk

Dear reader,

We are pleased to welcome you to Volume 2, Number 1 of TechnoHealth Surveillance newsletter. In this issue, we share with you the impact of drought in pastoral livelihood, highlighting on the need for community-based coping and adaptation strategies.

SACIDS has recently shared with various stakeholders, including the Policy Makers and scientific community, evidence from human and animal health research to enhance National Disease Surveillance Systems and global health security which is presented in this issue.

We would like to share with you the upcoming events that SACIDS plans to showcase its innovative ideas to enhance community-based One Health security.

We are looking forward to your feedback and comments on this issue 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 informative reading!

Enjoy your reading!

Impact of drought on pastoral livelihood: the need for community-based coping and adaptation strategies

“...the seasonal rains we were expecting have largely failed resulting to prolonged drought season in our areas. We normally experience two rainy seasons, the long one (“masika”) that falls between March and May, and the short one (“vuli”) that falls between October and December. We have missed “vuli” rains and have noted, unexpectedly, that even the long-lasting water points in our area have already dried-up. As the drought deepens the situation has forced livestock keepers to move animals, especially cattle, long distances in search for pasture and water. Some livestock owners with larger herds (over 300 cattle) have been hiring a truck at the rate of Tanzanian Shillings (TZS) 800,000 (USD 400) to transfer a batch of 25 cattle to access pasture and water at far away locations as far as Mara region which is located about 150km from Ngorongoro. In addition, it is not uncommon to find cattle been herded to access pasture in wildlife protected areas. The major challenge that we have been facing as a consequence of the current devastating drought is massive deaths of animals, mainly the older ones, because of starvation and stress related to long distance trekking in search for pasture and water. Some animals have ended up dying even when they had reached locations with some pasture and water because they were already exhausted. Some animals could not eat when an attempt was made to supply them with forage because of energy deprivation. We also suspect that a number of diseases, that were not known explicitly, might have contributed to animal deaths as they are more susceptible to diseases during drought. We have witnessed deterioration of livestock conditions and massive deaths of livestock as a consequence of prolonged severe drought in our area” These were remarks from Community Health Reporters (CHRs) in Ngorongoro district in northern Tanzania when describing the impact of drought on

their livelihoods that they have experienced from October 2016 to January 2017.

Describing further on the drought crisis that has persisted in Ngorongoro over the past three months, the CHRs narrated that they have experienced a 10-fold drop in the market value of livestock. For instance, adult cattle that was selling at an average price of TZS 700,000 (USD 350) before onset of drought, has dropped to TZS 70,000 (USD 35) when drought became severe. A two-fold increase in food prices was also reported. For instance, the price of a bag of maize in the area has increased from TZS 42,000 (USD 21) to TZS 86,000 (USD 43). It was reported further that some customers have been reluctant to accept buying animals with poor body condition even when extremely low prices were offered because they were not certain whether or not such animals could survive to reach the next market or consumer. Many animals were also reported to have died when they were transported in trucks. Improper disposal of dead animals was also reported posing additional public health threat in the area.

“It is worth noting that there are no diversified livelihood options in our area. As the livestock prices are falling, and food prices are on the rise, concerns have mounted over the extreme drought consequences on our (pastoralists) livelihood security because we depend mainly on livestock for nutrition, income and social events”, one of the CHRs lamented. In addition, some livestock keepers were reported to fear that if the drying up of water sources and declining of forage resources for livestock continues, they are likely to be at risk of losing all their animals, and would be left with less coping and adaptation options.

The CHRs were of the opinion that the prolonged drought would be followed by

persistent heavy rains that would result to soil erosion in the highlands and flooding in lowlands areas. This will result into the stretched impact of drought on crop yields and increased risk of diseases, especially those transmitted by vectors, in human and animal populations.

The steps taken to deal with the drought in the area included advising the livestock owners to reduce herd sizes by selling out some animals, especially the adult cattle, with strategic plans to restock after the drought season ends. However, besides the appalling trend of loss of animals' body condition and increased mortalities, some livestock owners were reluctant to adopt selling out their animals as one of the coping options. Some were of the opinion that traditionally and socially they needed to live with their animals and selling out adult cattle at such low prices was perceived as unwise decision. They reported further that even by taking step to sell out cattle when they were already in poor body condition was unkind step. They (livestock owners) believed that not all animals would die because of drought, even the ones with debilitating body condition, and therefore the survivors, and their future generations, would be able to tolerate subsequent drought events. This thinking and perception made them to face hard time in deciding which animals to dispose-off from their herds.

Drought is associated with enormous negative consequences in both human and animal populations including been malnourished and becoming more susceptible to diseases. There is increased risk of disease transmission in livestock in crowded conditions such as around water and feed sources. When animals become weak they are prone to physical injuries. Extremely high ambient temperature causes heat stress which negatively affects feed intake, growth, reproduction performance and milk production. The threat from poisonous plants is magnified during drought. Drought may result to increased levels of nitrate and cyanide in the pasture that may result to sudden death of large number of animals. Dehydration, salt poisoning and sulfate poisoning are other

effects of drought that are hazardous to animal health. In addition, the contact with wild animals increases the risk of exposure to pathogens, leading to outbreak of diseases in humans and animals. Common livestock diseases during drought include tetanus, blue tongue, blackleg, fascioliasis, screwworm, brucellosis and anthrax. In fact, an anthrax outbreak was recently been reported in the district.

As the major consequence of drought is water shortage, there could be increased risk for infectious diseases in humans and animals especially when hygiene is not maintained. When temperature rises and rains decline, people and animals are at increased risk of exposure to pathogens that thrive in the shallow warm water sources that exist during drought conditions. During drought period people are likely to share water sources with livestock increasing the risk of diseases transmissible between animals and humans (zoonoses). Some vector-borne diseases like Rift Valley fever have been reported to occur when it rains heavily following long periods of drought.

Having water available for cleaning, sanitation, and hygiene reduces the risk of many diseases. Improper water conservation and coping strategies during drought conditions can result to poor sanitation and hygiene practices. For instance, personal hygiene, cleaning, hand washing, and washing of food utensils, fruits and vegetables can be done improperly in an effort to conserve water. Recycling of improperly treated water in crop fields and processing of crop yields can contaminate foods. As a result, people might be at increased risk of water-borne, sanitation and hygiene-related diseases including shigellosis, typhoid fever and cholera. Unsafe water and poor hygiene were some of the potential risk factors for the recent cholera outbreak in Tanzania.

Other health risks associated with drought include increased amount of airborne particles, such as pollen and smoke from dry

soils and wildfires contributing to air pollution that may result to respiratory illnesses.

The stress and worry associated with drought can cause depression, anxiety, and other behavioral health conditions. In addition, drought can severely affect the growing season and increase the risk of insect and disease infestation in crops. Low crop yields can potentially lead to malnutrition and deaths as a result of rising food prices and shortages.

There is a need to intensify public health education and support to reduce the risk of malnutrition, occurrence of drought associated infectious diseases, deaths and other public health threats. There is a need to set up specific investigation to understand the spatial and temporal scales of drought severity and associated impacts and vulnerability in the affected areas to inform designing of relevant community-based coping, adaptation and recovery strategies to enhance community livelihood security.



Drought has claimed lives of domestic and wild animals in Ngorongoro



SACIDS shares with policy makers evidence from research to enhance National Disease Surveillance Systems

The National Institute for Medical Research (NIMR) in collaboration with Sokoine University of Agriculture (SUA), Kilimanjaro Christian Medical University College (KCMUCo) through the National Health Policy and Systems Research Hub (NAHEPOS) organized a Policy Dialogue on “Disease Surveillance and Outbreak Management Priority Policy Agenda for 2017 and Beyond”. The Policy dialogue was held on December 16, 2016 in Dar es Salaam, Tanzania. The objective of the dialogue was to discuss and deliberate on disease surveillance issues that require the attention of the policy makers in the country. The focus of this dialogue was on issues related to use of Mobile Technology and Participatory Approaches in disease surveillance, Community-based Disease Surveillance, Integrated multi-sectoral disease surveillance platform and Priority Policy Issues in Disease Surveillance and Outbreak Management.

The event was attended by 43 key stakeholders, including Researchers and Policy Makers, drawn from health related sectors that included research institutions (NIMR, Catholic University of Health and Allied Science (CUHAS), Muhimbili University of Health and Allied Sciences (MUHAS), Ifakara Health Institute (IHI), KCMUCo and SUA; Government Ministries (President’s Office Regional Administration and Local Government Authority, Prime Minister’s Office-National One Health Coordination Unit, Ministry of Agriculture, Livestock and Fisheries and Ministry of Health, Community Development, Gender, Elderly and Children. Others were from the World Health Organization, General Community and Media houses.

During the event the Southern African Centre for Infectious Disease Surveillance

(SACIDS, based at SUA) presented evidence from research on 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. The project is supported by the Skoll Global Threats Fund.

SACIDS prepared and presented three policy briefs namely, (i) Community-based One Health participatory disease surveillance using digital and mobile technologies, (ii) Increase efficiency and reduce cost of disease surveillance by using smart phones coupled with intelligent mobile app for data collection, and (iii) Use of ICT and mobile technologies to support specific disease surveillance: using cholera as an exemplar disease.

Other policy briefs presented during the event included: (i) How can the prevention and Control of non-Communicable diseases be integrated with Communicable disease control strategies, (ii) A 3Ms national surveillance platform to detect and respond effectively to public health events in Tanzania, (iii) Towards the development of infectious disease early warning system in Tanzania, (iv) The risk factor surveillance for prevention and control of cholera outbreaks in Tanzania, and (v) Introduction of congenital viral infections screening services for pregnant women in Tanzania.

Participants of the policy dialogue were of the opinion that the current approach in implementing disease surveillance strategy is outdated and inadequate. It has failed to

optimally detect and respond to disease outbreaks timely. It was highlighted that the current procedure of data collection at facility and community level and reporting to higher levels is of minimum use.

Participants concurred with the recommendations that Tanzania should adopt the use mobile phones coupled with intelligent mobile and web apps to improve the electronic Integrated Disease Surveillance and Response strategy (e-IDSR). This will involve the development of protocols, guidelines and other requirements to enhance the use of mobile and web app as an additional option to e-IDSR.

It was strongly recommended that utilization of mobile technologies and engagement of the community in disease surveillance have potential role in timely capture of suspected cases and risky events contributing to the occurrence and spread of diseases in the community. However, all participants emphasized the need to have a way to verify disease reports, which initially may be “just

rumors”. The capacity of the health systems need to be strengthened to promptly respond to rumors. Participants emphasized further that it is now crucial that collected data through the routine health management information system is analyzed to determine the pattern of various priority diseases – for decision making. For community surveillance to be reliable, the introduction of national unique identifier was agreed to be very important.

Other recommendations that were made to strengthen Disease Surveillance and Outbreak Management included the need for multi-sectoral collaboration, disease surveillance to be included as an important component in the Community Health worker training programmes, improvements on data management and sharing between relevant sectors and enhance data utilization at the point of collection (facility and community levels). Recommendation was also made on the need to develop a platform for researchers and policy makers to share research information.



Participants of the policy dialogue

SACIDS shares its research outputs at the One Health EcoHealth Congress

The 4th International One Health Congress & 6th Biennial Congress of the International Association for Ecology and Health was held in Melbourne, Australia from December 3-7, 2016. This five-day meeting brought together the global One Health and EcoHealth communities to create more integrated approaches to research and practice on global health challenges. The event was attended by about 1,000 delegates from 86 countries that had opportunity to share the research findings, experience and discuss on the strategic disease control using One Health and EcoHealth approaches.

The Southern African Centre for Infectious Disease Surveillance (SACIDS) was represented in this meeting by Huruma Tuntufye, Zablon Bugwesa, Daniel Mdetele, Calvin Sindato, Mark Rweyemamu, Eson Karimuribo, Christopher Kasanga and Eric Beda.

During the meeting, delegates had opportunity to learn about the threats facing global health with particular attention devoted to human and animal health, as well as environmental and ecosystem. The scientific outputs from SACIDS that were shared with conference delegates included TechnoHealth Innovation Laboratory to support One Health disease surveillance, Molecular epidemiology of African swine fever outbreaks, Bovine tuberculosis in African buffaloes in Ngorongoro

Conservation Area, prevalence of Methicillin-resistant *Staphylococcus aureus* isolated from domestic dogs, and Rift Valley fever risk mapping and modelling in Tanzania.

Conference delegates discussed on strategies to manage the global health threats, all of which called for collaboration, for the continuation of science-based debate and for, on many occasions, new ways of working to tackle these threats to our planetary health and well-being. Participation from the floor on translating policy into action: touching on urgency and inaction, the role of government and of individuals, negotiation, and optimizing the opportunities which arise were all perceived as effective strategies for global One Health and EcoHealth approaches to create more integrated approaches to research and practice on global health challenges.

The need to embrace collaboration to develop policies which can effectively impact global issues was further emphasized. It was recommended that stakeholders in the health sectors should engage with people with local interests, communicate the science more effectively and share the information, data and knowledge widely. It was commonly agreed that a theory of change will appeal all of the policy change attributes.



Upcoming events

1. The West African Network for Infectious Disease Surveillance (WANIDS) stakeholder meeting will be held on March 1-3, 2017 in Accra, Ghana. The meeting is co-organized by the West African Health Organization (WAHO) and Connecting Organization for Regional Disease Surveillance (CORDS).

2. The 5th International One Health Congress will be held in Saskatoon, Canada on June 22-25, 2018. The event will focus on

One Health Science, Antimicrobial Resistance and the Science-Policy interface issues. You can get more information and updates about this event at www.onehealthplatform.com

SACIDS plans to participate in these events showcasing application of digital tools on One Health participatory community-based disease surveillance to enhance early detection, timely reporting and prompt response to infectious diseases in human and animal populations.

Key Partners:

