

# Syndromic Surveillance Training for Producers on Transboundary Animal Diseases as an Aid to Increase Disease Reporting, Northern Ethiopia

## Abstract

Lack of disease reporting from the field has been reported as a major constraint to control of transboundary animal diseases in Ethiopia. In this program, a total of 446 smallholder livestock producers and local veterinarians from 15 different woredas (districts) in Northern Ethiopia attended two-day workshops on recognition and reporting of transboundary animal and zoonotic diseases. Comparison of pre- and post-tests indicated effective acquisition of knowledge. Assessment of disease reporting from these 15 woredas for the subsequent six months after training failed to demonstrate any change in disease reporting. Reasons postulated included: lack of actual disease present; insufficient number of trainees to create a measurable difference; and complicated structure of animal health disease reporting, with multiple layers of animal health assessments between the farmer and the actual reporting entity. The latter reason was deemed most probable, and this structure is presented. The study emphasizes the importance of thorough understanding of field conditions and communications in order to effect measurable change. Follow-on analysis revealed extensive downstream training subsequent to the workshop, indicating that, as long as the structure is assessed, this training format could prove valuable in control of transboundary animal and zoonotic diseases.

## Research Team

**Principal Investigator (PI):** Corrie Brown, University of Georgia  
**Research Team:** Karyn Havas (Cornell University and Plum Island Animal Disease Center)  
 Etsay Kebede, Netsanet Berhe, Abra Bsrat (Mekelle University);  
 Abhra Gebremehdin (Tigray Regional Animal Health Authority)  
**Research Location:** 15 woredas in Tigray, Ethiopia



Some team members represented here



## Background and Justification

For most lower-middle and low income countries, agriculture forms the cornerstone of the national economy. In Ethiopia, where 65% of the population relies on livestock for their livelihood, control of animal health problems is essential to improving conditions for the populace. Losses due to diseases are high, which leaves the rural economy weak. Development of an effective animal health system that can consistently oversee the control of the most serious and economically damaging livestock diseases would markedly improve the value of the national herds and flocks and help the country leverage its considerable potential.

World Organisation for Animal Health (OIE) recommends that every country maintain and support a Veterinary Services (VS) as a governmental body to manage surveillance and control of transboundary animal diseases, which do not have effective treatments and which often have high morbidity/mortality. Ethiopia currently has many transboundary animal diseases, but knowledge of the extent and distribution is minimal as reporting from the field has been limited, hampering the VS' ability to conduct effective disease surveillance and control programs (Shapiro, 2015).

## Problem Addressed

Training of producers and private veterinarians on awareness of reportable diseases and providing information on how to transmit that information to authorities could provide a solid strengthening of the system and give government departments with scant resources, including VS, a selective ability to engage only where needed. It was the intention of this research to conduct training for producers and veterinarians in multiple districts (woredas) in northern Ethiopia, and to measure the change, if any, in disease reporting subsequent to the training.

## Methods and Results

15 woredas for training and 10 control woredas were selected randomly. Two-day workshops were held in each of the 15 woredas, using consistent curriculum delivered by trainers from Mekelle University and Tigray Regional Health Authority.

All 15 workshops were delivered over one 2.5 week period (late March 2017), with two trainers at each two-day workshop. Each workshop had 30 participants, mostly smallholders, with some veterinarians, for a total of 446 smallholder livestock producers and veterinarians. Each participant received a copy of the manual, *Syndromic Surveillance for Livestock Diseases, with Emphasis on Transboundary Animal Diseases*, originally commissioned by AU-IBAR.



Pre- and post- tests scores were compared using the Wilcoxon Signed Rank test for paired samples. There were significant gains in knowledge overall, aligning with the learning objects.

At the beginning of each workshop, focus group discussions were held to assess knowledge of and/or barriers to disease reporting (**See Box 1 at right**).

For the 25 woredas chosen, data on 5 reportable diseases – foot-and-mouth disease, peste des petits ruminants, lumpy skin disease, sheep and goat pox, and rabies - was obtained from the Tigray Regional Veterinary Office in Mekelle, which receives reports from each woreda, through the Woreda Veterinary Officer (WVO). Reporting data from the six month period subsequent to the timing of the workshops was collected (April through September). To account for potential annual weather fluctuations, outbreaks, and pastoral movement patterns, data was collected for the five previous years during this same time period and the average number of cases reported was used as a baseline. All analysis was conducted using R-software version 3.4.1.

For the previous 5 years, there was an overall low rate of reporting, with less than one case reported per month across the time for all woredas. There was no significant difference in reporting between the trained and control woredas in the months immediately following the training or compared to the historical rates of reporting for these woredas in the region. For this reason, a FOLLOW-ON analysis was conducted.

## Follow-on Analysis

Subsequent to the trainings and analyses of reporting, producers and veterinarians in four villages in a woreda chosen by convenience were interviewed and questionnaires completed. Significantly more trained producers conducted downstream training compared to those who were not trained (92% vs 29%). Of the veterinarians trained, most conducted some sort of downstream training, with one reporting training an additional 40 producers and another close to 1,000.

Closer examination of the system by the research team revealed potential reasons for lack of reporting. Many of the animal health professionals who first see the animals, either the "cluster veterinarians", or the veterinary assistants, are often paraprofessionals, who may not understand the reporting structure. Similarly, private veterinarians generally do not have the knowledge of reporting structure. Consequently the gaps in information getting from the producer through to the WVO are wide. **See Figure 1 below.**

## Box 1. Focus group discussions at the trainings, regarding reasons for reporting diseases (or not). Results were collected anonymously and are listed in order of frequency -

### From the producers:

- No awareness that diseases need to be reported, or to whom to report (this was a unanimous response in the Western Zone Lowlands)
- Producers had no idea they were supposed to report certain diseases
- No flow of information between veterinarians and producers so lack of awareness
- No network (cell phone) coverage, so how can producers possibly call?
- Insufficient response even when they do report
- Community traditional healers are easier to contact and are nearby
- Most farmers had no idea if their animals were sick, it could spread to neighboring farms and make other animals in the community sick – "I didn't know that the diseases in my farm are risky to others and could influence the larger population".

### From the veterinarians:

- No clear understanding of the chain of reporting and responsibilities
- Not sure which diseases are to be reported
- We are only tasked with communicating with government animal health when there is a campaign for a specific disease
- No transport allowance to get out to the farm and see the problem
- There is no mechanism to report from the private sector (i.e., private veterinarian to government)
- There are so many animals and so few veterinarians, we just can't reach them all

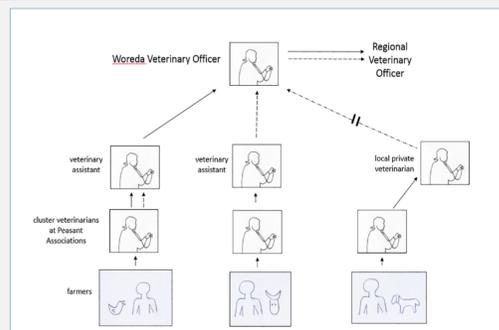


## Scaling Up

- Mekelle University (MU) Community Service Office funded training in two additional districts of Tigray. Additionally, Mekelle University has already extended training to northern Afar region.
- Ministry of Agriculture creating TADs-free zone in western Tigray, using UF-LSIL public good/private good disease model for training on reporting so that live animal exports (Begait) can begin in 2025.
- FAO-Ethiopia has adopted this program. The manual has been translated into all the local Ethiopian languages and is now being printed. FAO will oversee similar trainings in all regions of Ethiopia, with a focus on the inherent reporting paths present that were revealed and clarified in this project.

## Financial Sustainability

This program entails training of farmers in recognition of key diseases and motivation to report them. As such, the sustainability rests with the farmers' knowledge. The manual distributed may persist in communities for some time, and it is anticipated that trained farmers and veterinarians will continue to disseminate information downstream. As all sustainability is based on farmers' knowledge and behavior, there are no associated costs.



**Fig 1** Schematic of reporting of suspect transboundary or zoonotic disease from farm level to region. Solid line arrows show reporting/referral of suspect cases. Dotted line arrows show failure to report to next level. Interrupted dotted arrow line demonstrates no awareness of responsibility to report.

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