



# An electronic syndromic surveillance system for early detection and control of livestock diseases in Marsabit County, Kenya



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## Introduction

- Infectious diseases cause substantial losses on livestock production and trade, particularly in pastoral areas where livestock husbandry is the main socioeconomic activity. Some of these diseases are zoonotic and hence their occurrence have additional consequences on human health and wellbeing.
- Surveillance data should inform intervention measures but sometimes the long turn-around time used for processing some of these data limit their timeliness and utility. Syndromic surveillance systems are therefore being used more for early detection and response since they can identify clusters of cases before definitive diagnoses can be made.
- We implemented an electronic syndromic surveillance system in Marsabit County, Kenya as part of the animal health and production interventions in the area.

## Materials and methods

**Study area:** Marsabit County is located in the Northern part Kenya (Fig. 1).

**System components:** It comprises a cloud server linked to a series of data collection phones operated by field veterinarians based at the sub-county locations. It has a sub-component for collation of meat inspection records from abattoirs.

**Operations:** For field data, veterinarians collect data via telephone contacts with community disease reporters (CDR) who are based at the village and have been trained on disease recognition. The data are posted to an on-line server at the end of each day or as soon as it is recorded in data collection tool (ODK – Collect).

**Analyses:** The server has an automated script that processes and analyses the data as it receives and generates trends in syndromes or diseases in tables, maps or graphs which can be used by the County veterinarians to inform targeting of response interventions in space and time.

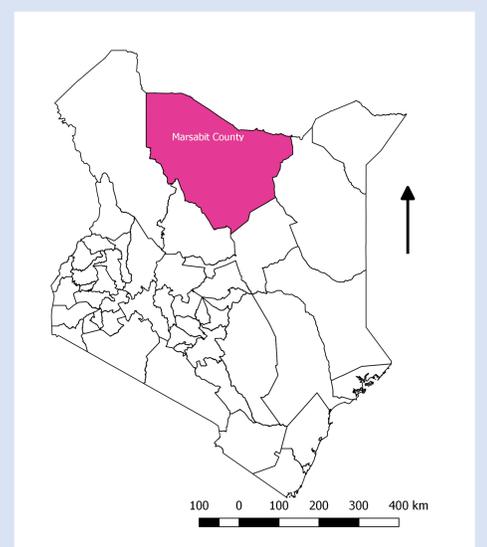


Figure 1. County map of Kenya showing the location of Marsabit County

## Results and discussion

- Syndromes reported in the field included foot and mouth lesions, diarrhea, pneumonia and a few sudden death events. Suspected conditions associated with the syndromes included Peste des Petits ruminants in sheep and goats, pneumonia, and Foot and Mouth Disease in cattle among others
- Trends captured in Figures 1 and 2 identify months when morbidity cases rose beyond the expected levels. These were in the wet periods (data not shown) suggesting that syndromic surveillance can be used to identify meteorological variables that increase disease risk
- Table 1 shows observations reported from the slaughter houses across the county. Most of the cases reported in cattle were fasciolosis and pneumonia while in sheep and goats, pneumonia was the main post mortem finding reported. Cysts are very few but there is need to do lab analysis to characterize them to gauge their zoonotic importance

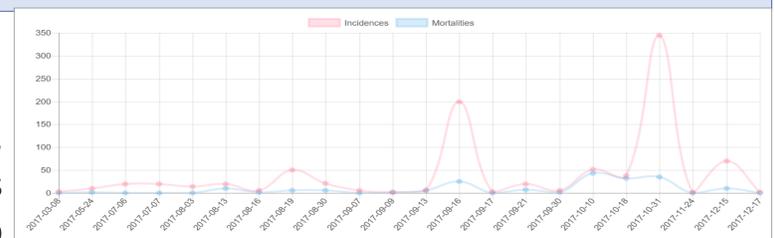


Figure 2. Trends in reported morbidity and mortality cases in cattle



Figure 3. Trends in reported morbidity and mortality cases in sheep

Table 1. Reported conditions identified during meat inspection

Case	Cattle			Sheep and goats		
	September	October	November	September	October	November
Abscesses	1.7%	2.8%	4.4%	0.8%	0.7%	0.9%
Fasciolosis	17.4%	15.1%	5.4%	0.3%	0.4%	0.0%
Pneumonia	0.0%	22.2%	15.3%	11.1%	11.8%	12.1%
Cysts	0.0%	3.3%	4.4%	-	-	-
Oesophagostomosis	-	-	-	0.5%	0.6%	0.6%
<i>Stelisia hepatica</i>	-	-	-	5.2%	2.9%	0.9%
Total number slaughtered	178	212	203	989	1078	1011

**Conclusion:** The syndromic surveillance is the most appropriate system for early detection and response to livestock diseases in Marsabit County

## Acknowledgements

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