

# Zoonoses of Livestock and Humans in Kenya (ZooLink Project)



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## What is ZooLink?

ZooLinK stands for Zoonoses in Livestock and Humans in Kenya. Zoonoses are diseases that affect both humans and animals, such as Brucellosis – *ugonjwa wa maziwa*.

In this project, we are trying to find ways of detecting these diseases earlier, both on the ground and in the laboratory. We therefore work closely with the animal sector (livestock markets and slaughterhouses) and the human sector (hospitals and health centres).

We also collaborate with Kenyan government departments for both sectors in Busia, Bungoma and Kakamega Counties in western Kenya. With time, we hope to develop a program that can detect zoonoses across Kenya.



Our team sampling animals in a livestock market

## How do we do this?

At livestock markets and slaughterhouses we select animals (cows, sheep, goats, pigs). We take some animal measurements (e.g. temperature, age), and collect samples, such as blood, stool, tissue and nasal swabs. We also ask the owner questions about their animal's health and where the animal originated from.

In slaughterhouses we follow up the animal after slaughter to check for any disease in the meat or organs. At hospitals and health centres we ask patients questions about their symptoms, and also collect samples such as blood, stool and nasal swabs.

All the samples are taken to our lab in Busia where different tests are run to look for zoonoses which we know are present in Kenya.

## Where do we do this?

We visit 4 livestock markets and slaughterhouses in each County once every month:

- Busia (Butula, Funyula, Amukura and Angurai)
- Bungoma (Chwele, Kimilili, Webuye and Myanga)
- Kakamega (Lubao, Koyonzo, Shinyalu, Ikolomani)



Our work in animal slaughterhouses: A *Fasciola* parasite (aina ya minyoo) affecting the liver of a cow

## The zoonotic diseases we are working on:

Diarrhoea diseases (magonjwa yanayo saba bisha kuhara kwa wanyama na binadamu):

1. Salmonellosis
2. Campylobacteriosis
3. *Escherichia coli*
4. Staphylococcosis

Magonjwa yanayo sababisha uvimbe kwa nyama

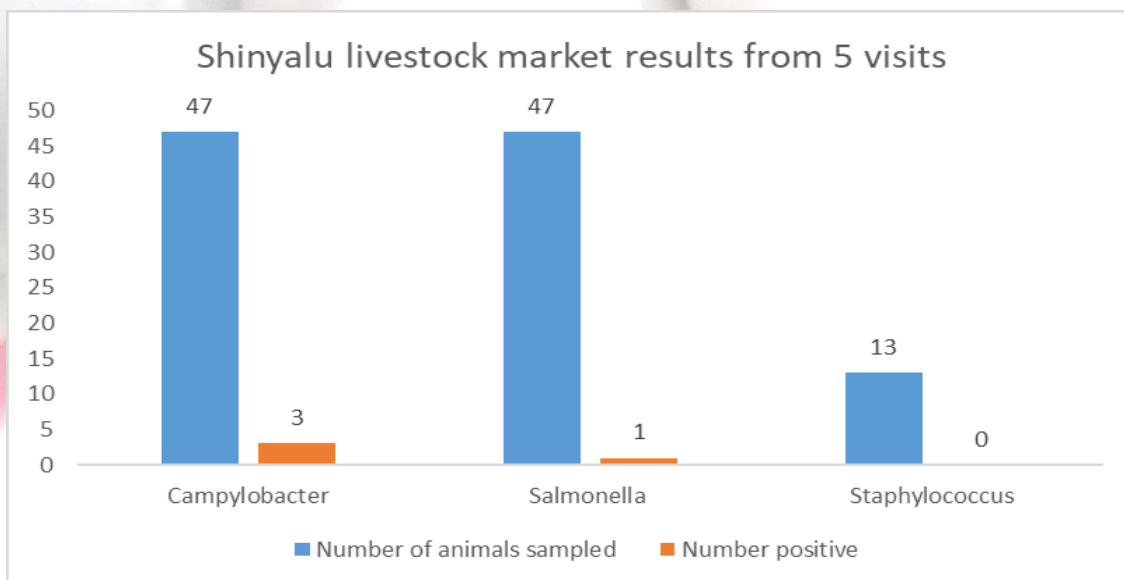
1. Cysticercosis
2. Echinococcosis

Other diseases (Magonjwa mengineyo)

1. Brucellosis (ugonjwa wa maziwa)
2. Trypanosomiasis (ugonjwa wa malale)
3. Rift Valley Fever
4. Anthrax (kimeta)
5. Leptospirosis
6. Q fever
7. Fasciolosis (minyoo ya maini)
8. Toxoplasmosis
9. Bovine tuberculosis (kifua kikuu)

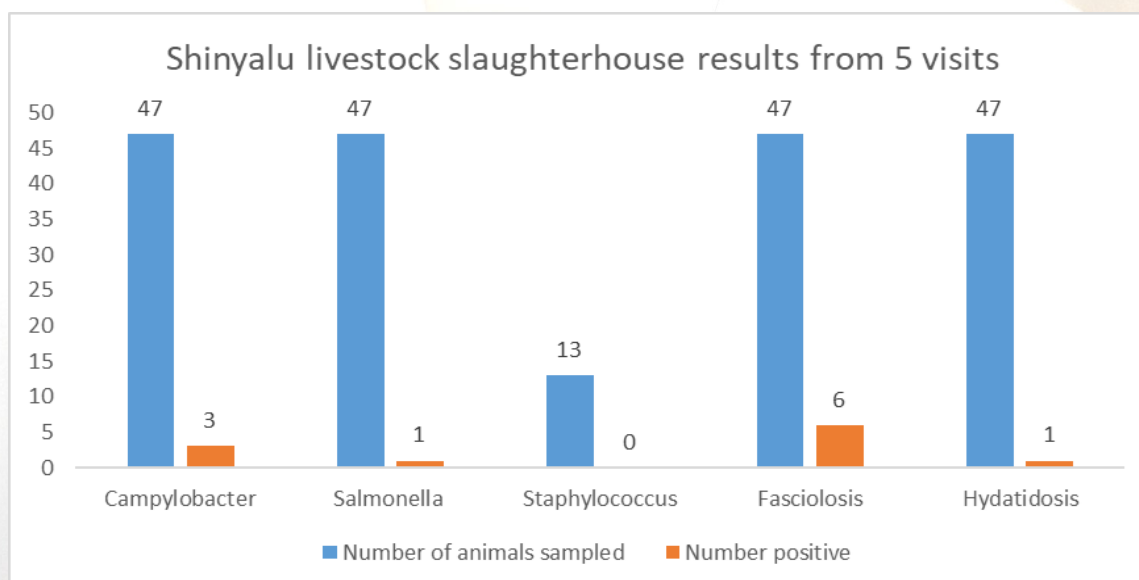
### Shinyalu livestock market (results from 5 visits)

Zoonotic disease	Number of animals sampled	Number positive
Campylobacter	47	3
Salmonella	47	1
Staphylococcus	13	0



### Shinyalu bovine slaughterhouse and pig slab (results from 5 visits)

Zoonotic disease	Number of animals sampled	Number positive
Campylobacter	47	3
Salmonella	47	1
Staphylococcus	13	0
Fasciolosis	47	6
Hydatidosis	47	1





### **What is Campylobacter?**

Esther is a young mother. For the past couple of days she has had diarrhea, stomach ache, and fever. She went to the hospital where they asked her a few questions and collected blood and stool samples. A few days later they called to tell her that she had a Campylobacter infection. They explained that this is a common infection which passes through meat that is not cooked very well, or milk that is not boiled before drinking. They told her that she should make sure that all food is cooked well, and that she washes her hands when preparing food. They also told her that she should be even more careful if there are younger children or elders in the household, as Campylobacter infection can be very bad for them.

### **What is Salmonella?**

Barasa works in a pig slab. Some time ago he felt sick; he had diarrhea, was vomiting, and his stomach hurt. He still went to work, even though he had to rush out a few times. Last week he felt sick again, but this time he felt too weak to work and had to go to hospital. At the hospital they asked him questions about his work and collected blood and faecal samples. Some days later they told him that he had Salmonella and should take antibiotics. They explained that Salmonella infection is also found in animals, and he may have got the infection when slaughtering and skinning the pigs. They encouraged him to wash his hands well after touching animal blood and faeces. They also told him that he should not work when feeling sick because he can pass the infection to the meat that he handles, and the other people that he works with.

### **What is Staphylococcus?**

Tobias is a livestock trader. He buys and sells animals at different markets, and often handles the animals or carries some of the younger stock. Last week he did not feel like eating anything, which was not like him! When he went to hospital, they asked him if he also had some stomach problems, which he did. They then poked a stick up his nose to check for something, and some days later told him that he had Staphylococcus aureus. They explained that Staphylococcus lives on the skin and hair of both people and animals, but can sometimes make us feel sick. They suggested that he washes his hands well whenever he touches his animals.

### **Results from Mukumu Missionary Hospital (Shinyalu)**

Out of the 43 patients sampled at Mukumu hospital 2 were positive for Salmonellosis and 5 were positive for Campylobacteriosis.

## Key take home messages

To stay healthy always:

- Cook food properly and serve it while still hot (Fig. 1)
- Avoid raw milk and products made from raw milk. Drink only pasteurized or boiled milk.
- Boil or treat drinking water (Fig. 2).
- Wash hands well using soap before handling food (Fig. 3)
- Wash fruits and vegetables with clean water (Fig. 4).
- When working in the slaughterhouse observe cleanliness and wear proper garments (Fig. 5).



Fig. 1



Fig. 2

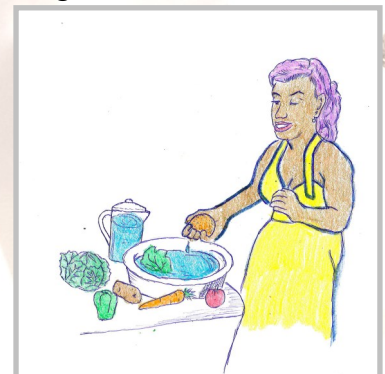


Fig. 4



Fig. 5

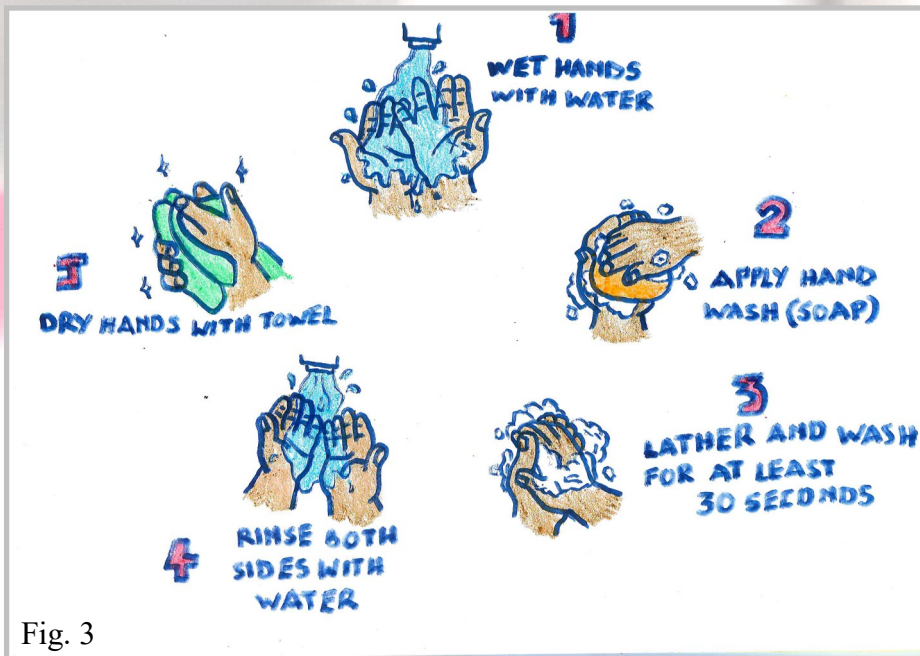


Fig. 3

## Future steps of our work

- Continue testing for the other 12 zoonotic diseases
- Check for antimicrobial resistance to understand why sometimes the drugs we take do not work
- Continue visiting the livestock markets and slaughterhouses to see whether the diseases change over time
- We are remaining with 17 visits at the livestock markets and slaughterhouses. Please be nice to us.



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