Zoonoses of Livestock and Humans in Kenya (ZooLink Project)

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 from 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?

We select cows, sheep, goats, and pigs at livestock markets and slaughterhouses and check, among other measurements, their body temperature and age. We also collect samples, such as blood, faeces and swabs from their nose. After that we ask the owners questions about their animal's health and where they got it from. We use the collected samples to conduct lab tests in our Busia lab to determine whether the animal is sick.

We visit hospitals in areas adjacent to the markets and the slaughterhouses to collect samples such as blood, faeces and swabs from their nose and talk to the patients to determine whether they had or have zoonoses.

Where do we do this?

We visit the following livestock markets (LM), slaughterhouses (SH) and hospitals/health centres in the following counties once every month:

- Busia (Butula MH, Busia RH, Lukolis SCH)
  - LM&SH: Butula, Funyula, Amukura and Angurai
- Bungoma (Lugulu MH, Bungoma RH, Bumula SCH)
  - LM&SH: Chwele, Kimilili, Webuye and Myanga
- Kakamega (Kakamega RH, Matungu SCH, Mukumu
  - LM&SH: 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 yanayosababisha kuhara kwa wanyama na binadamu):

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

Magonjwa yanayosababisha uvimbe kwa nyama

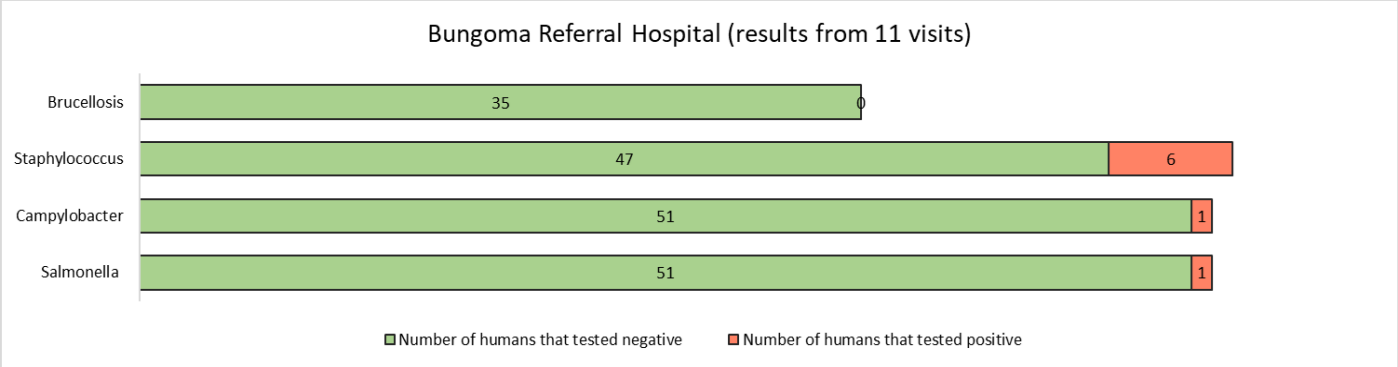
1. Cysticercosis
2. Echinococcosis

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)

Bungoma Referral Hospital (results from 11 visits)

Zoonotic disease	No. of humans that tested negative	No. of humans that tested positive
Campylobacter	51	1
Salmonella	51	1
Staphylococcus	47	6
Brucellosis	35	0



Kimilili livestock market (results from 10 visits)

Zoonotic disease	No. of animals that tested negative	No. of animals that tested positive
Campylobacter	88	6
Salmonella	91	3
Staphylococcus	48	11
Brucellosis	59	0
N/B: 41 out of the 100 animals sampled had ticks		

Kimilili slaughterhouse (results from 8 visits)

Zoonotic disease	No. of animals that tested negative	No. of animals that tested positive
Campylobacter	75	3
Salmonella	70	8
Staphylococcus	48	8
Fasciolosis	62	16
Brucellosis	58	0
Hydatidosis	72	6
N/B: 25 animals had ticks and 4 had lice out the 78 animals sampled		

What is Campylobacter?

Esther is a young mother. She has had diarrhea, stomach ache, and fever for the past few days. She went to the hospital, where they collected blood and faecal samples and asked her a few questions. A few days later she was told that the tests had shown that she had a Campylobacter infection. The health workers explained to her that this is a common infection which she could have got after eating undercooked meat or drinking unboiled milk. She was also advised to be extra careful with children and elderly people since this Campylobacter can affect them more severely.

What is Salmonella?

Barasa works in a pig slab. 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. He was asked a few questions at the health facility and his blood and stool samples were collected. Later, he was told he was suffering from *Salmonella* and was put on antibiotics.

He was told that Salmonella infection is also found in animals, and he may have got the infection when slaughtering and skinning the pigs. The health workers 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, which will be consumed by other people, and his colleagues.

What is Staphylococcus?

Tobias buys and sells animals at different markets. He often handles the animals or carries some of the young stock. He describes himself as a man with a big appetite, and was surprised when he did not feel like eating anything last week. When he went to hospital, the health workers asked what was bothering him and he told them he was experiencing stomach upsets. The clinician poked a stick up his nose and picked the dirt therein. Days later, he was called to get his results and was told he was suffering from *Staphylococcus aureus*. He was told that Staphylococcus lives on the skin and hair of both people and animals, but can sometimes make human beings feel sick. He was advised to wash his hands thoroughly whenever he touches his or any other animals.

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 thoroughly using soap before handling food (Fig. 3)
- Wash fruits and vegetables with clean running water (Fig. 4).
- When working in the health care facilities observe cleanliness and wear proper protective gear e.g. lab coats, gloves (Fig. 5).

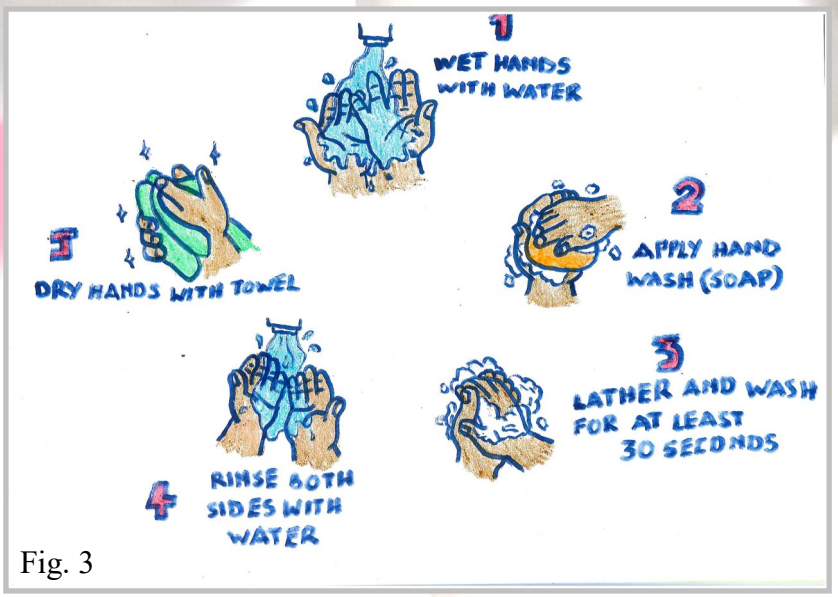


Fig. 3


Fig. 1


Fig. 2


Fig. 4


Fig. 5

Future steps of our work

- Continue testing for the other 11 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 13 visits (once each month) at the health care facilities, livestock markets and slaughterhouses. Please be nice to us.

Website:
http://www.zoonotic-diseases.org
Email:
zed-group@zoonotic-diseases.org
Mobile:
+254 710 813 458