

# BACKGROUND

- Query (Q) fever (or Coxiellosis) is a zoonosis caused by *Coxiella burnetii* that occurs worldwide.
- On 11<sup>th</sup> march, 2014 ZDU notified by county health department of Baringo and the Walter Reed Project of an outbreak of Q-fever.
- Between 11-25 February, two children and four adults died with symptoms of headache, chest pain, epigastric pain, and vomiting.
- Initial response by CHMT and collected 31 human samples and submitted to Walter reed laboratory.
- Lab. Results: evidence of acute Q-fever infection in 17 of 31 (54.8%).

# Justification for the Field Investigation

- Concerned county health authorities requested for the investigation following;
- Occurrence of six deaths within two weeks in the same location
- Laboratory evidence of acute Q fever infection in 17 of 31 (54.8%)
- Need to arrest spread of any infectious disease among the residents to prevent more deaths.
- Broadly to identify potential modifiable factors that would protect the residents in the future.

# Outbreak investigation team

- A broad based investigation team was formed from ZDU, FELTP, both Health & veterinary CHMT.
- Team composition;
  - ❖ Two medical officers
  - ❖ One veterinary officer
  - ❖ Laboratory technologist
  - ❖ Disease surveillance officer
  - ❖ Animal health assistant.

# Objectives

- The objectives of this investigation were to:
  1. To determine the extent of the outbreak
  2. To characterize the outbreak in time, place and person
  3. To determine positivity of *C. burnetii* in animals within households with suspected human cases.

# METHODS

- **Outbreak site:** Amaya location, in Churo division, East Pokot sub-county, Baringo County.
- Investigation focused on two sub-locations
  - ❖ Amaya and Mugekamar sub-locations
- visited four (4) villages of Nasur, Cheptagarmet, Cherelsosion and Kiptari where the deaths had been reported.
- **Study population:** study subjects included both humans and livestock
- Traced & Identified households where deaths had been reported in the four different villages
- A buffer of 2-5 kms created from each household.

- All households within the buffer zone were included in the survey.
- **Case definitions:** humans with a history of fever (hotness of body) plus any of the following symptoms headache, body weakness, arching of muscles/joints, dry cough, sore throat, chest pain or abdominal pain from 1<sup>st</sup> January 2014.
- verbal consent obtained, interviewed and a 5ml venous blood sample collected.
- Animals (cattle, sheep and goats) of reproductive age within the enrolled households with a history of abortions, stillbirth, vaginal discharges and infertility in the past one year

- In households that reported no reproductive disorders in the herd, five female animals of reproductive age per species were randomly selected for blood specimen collection.
- **Study design:** Cross-sectional study
- **Household survey:** A household questionnaire was administered to the household head to obtain household socio-demographic characteristics.
- **Individual survey:** An Individual standardised questionnaire was administered to individuals within the household to obtain individual demographic, and exposure factors.

- **Malaria morbidity data review:** Malaria cases for one year period (March, 2013 to March, 2014) in Churo dispensary reviewed.
- Malaria was used as a proxy for a acute febrile illness.
- Malaria tests requested Vs Malaria laboratory confirmed cases.
- Objective: identify malaria trends per month and check if there was increase of acute febrile illness in the months when the q fever outbreak was suspected.
- **Q fever public health messages:** team distributed q fever fact sheets prepared using CDC guidelines, 2013. to be used for public health education

- **Study period:** 23<sup>rd</sup> March, 2014 to 31<sup>st</sup> March, 2014.
- **Data Management and Analysis:** Data stored in both Ms Excel and Ms Access. analysis using Microsoft Excel and Epi info version 7.A descriptive analysis done.
- **Ethical Consideration:**
- Investigational protocol was approved by the Kenyan Ministry of Health through FELTP.
- Verbal informed consent was obtained from participants before sample collection.
- Consent was also obtained from livestock owners before sample collection in animals.



# RESULTS

- Sample testing is ongoing.
- **Total human samples:** 48 in 4 villages.
- **Distribution per village:** Nasur 40 % ( n=19), Cheptagarmet 33 % ( n=16), Kiptari 23 % ( n=11) and Cherelsosion 4 % ( n=2)
- **Sex distribution:** 60% were female.
- **Age distribution:** The median age was 30 (range 8 – 65) years.
- **Total animal samples:** 121 serum samples
- **Species distribution:** Goats 65% (n=79) , sheep 34% (n=41) and cattle <1 % ( n=1).
- **Sex distribution:** 100% female
- **Age distribution:** between 1 – 4 years

## Household survey demographics

- 34 households enrolled and 97% (n=33) had one or more individual who met our case definition.
- In 94 % ( n=32), the household head determined decision on seeking health services
- **Livestock ownership:** 97% of the households owned livestock.
- **Reproductive health disorders in animals:** abortions 76% (n=26), still births 47% (n=16) , retained placenta 41% (n=14), birth of weak young 41% (n=14) and infertility 15% (n=5),
- **Tick control:** 100% reported tick control with 85% reporting weekly tick control.

- **Milk consumption habits:**
  - ❖ 73 % ( n=25) raw always,
  - ❖ 18% (n=6) boiled sometimes, and
  - ❖ 9% (n=3) boiled always
- **Individual survey demographics**
- 48 individuals interviewed
- **Primary occupation:** working in the farm full time 46%, working on farm part time 29% and the least was salaried off farm at 2%.
- **Education:** Majority (79%) of the participants had no formal education.

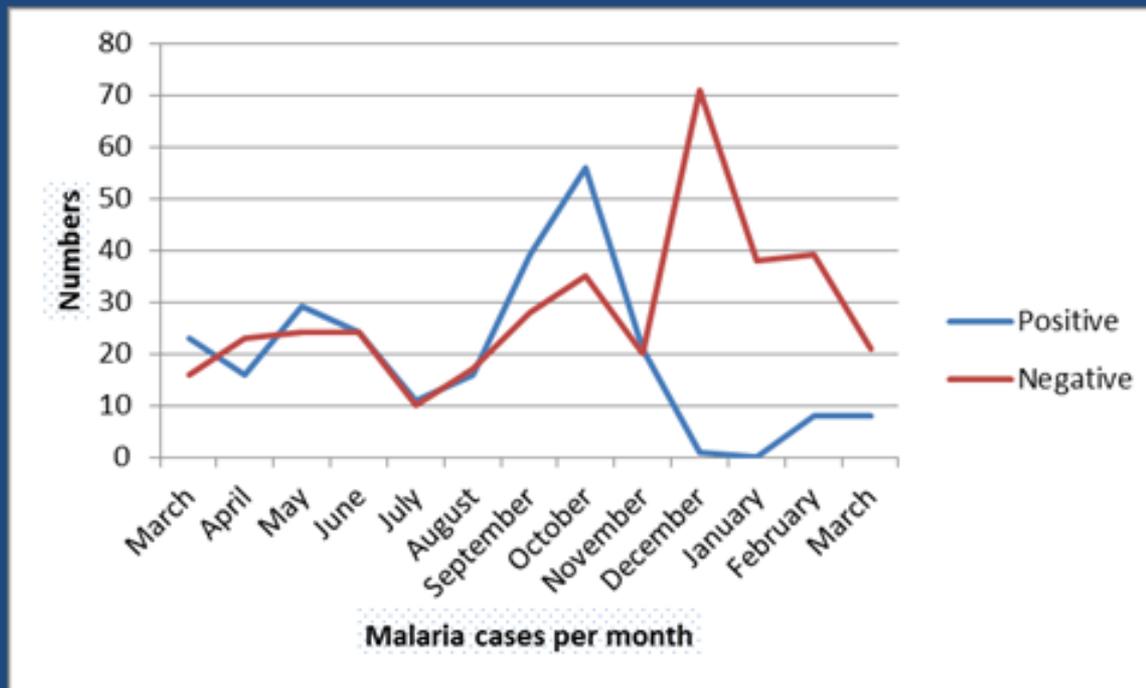
Table: percentage of signs/symptoms documented in participants interviewed.

<b>Sign/symptom</b>	<b>Percentage (%)</b>
fever	100
Headache	30
Abdominal pain	20
body weakness	14
Chest pain	14
Dry cough	14
Arching of muscles/joints	8

- **Health service seeking:** Forty four (44%) sought treatment from a public health facility.
- **Preferred channel for public health information:** public health officials (40%) while the least was radio at 4%.
- **Close interaction with animals:** 98 % ( n=47) reported close interaction with animals through;
  - ❖ Herding 92%, Slaughtering 83%, feeding animals 77%.  
Milk consumption habits were boiled 2%, both boiled & raw 19% and raw 79%.
- **Exposure factors documented:** assisting animals in delivery 81% (n=39), contact with aborted fetus 50% (n=24) and removal of retained placenta 23% (n=11).
- **Knowledge on q fever:** 98% had never heard of q fever before

- **Malaria morbidity data review**

- Malaria positivity trend per Month, March, 2013 to March, 2014.



# CONCLUSION AND RECOMMENDATIONS

- Although sample testing is still on-going,
- The team recommends
- Analytic study – determine risk factors for q fever
- Explore possibility of a point of care test for q fever.
- A awareness creation on q fever & other zoonotic disease risk factors.

# ACKNOWLEDGEMENT

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- ❖ Walter reed project –Kisumu
- ❖ County Health Management Team - Baringo County
- ❖ Mark Rotich – Marigat DVBD laboratory officer in charge
- ❖ Amaya location residents
- ❖ Outbreak Investigation Team

END

THANK YOU

