



Lumpy Skin Disease outbreak Investigation

- Country name; Cambodia

How to investigate the outbreak ?

- ❑ Provide a detailed stepwise approach on how to investigate an outbreak
 - Identify an outbreak area (location of LSD outbreak; Province X)
 - Prepare for field works (Team work and Equipment)
 - Collect all information related to the LSD outbreak; existence of and information (Vet recoded, type of infected animal, production types, history of an outbreak area, lab confirmation....)
 - Generate LSD case definition (suspected, probable and confirm case)
 - Perform descriptive epidemiology (scenario)
 - 8 million cattle of 1 million farms, herd size rang from 1-100 head, most household have 3-10 cattle, have some buffalo in the village, 10-20 sheep or goats or both are the majority of famer,
 - Farm's practice; communal grazing
 - LSD outbreak since 2019 until August 2021 in total there were 28 outbreak

How to investigate the outbreak ? Cont

- ❑ Provide a detailed stepwise approach on how to investigate an outbreak
 - Develop and Evaluate hypothesis (make questionnaire forms related to situation of LSD outbreak; KAP survey, risk factors....)
 - Data entry, recode and analyze
 - Implement control and prevention measures
 - Communicate findings

Case definition and define controls

- ❑ Develop a case definition, and then define suitable controls and where to find them
 - ✓ Case herds were defined based on clinical suspicion of LSD in at least one bovine demonstrating the specific clinical sign multiple nodules on the skin 1-5 cm. Case farms were eligible for recruitment if the suspected case occurred between July and September 2021.
 - ✓ Matching criteria for control herds were based within the same village and not reporting suspected LSD between July and September 2021.

Stakeholder involved

- ❑ Who provides information, who are local people to be involved
 - Farm owner in the village (suspected and non-suspected farms)
 - Local vet (Provincial vet, Animal Health worker, Chief village)
 - Laboratory unit
 - Trader
 - Slaughter house owner

Source and transmission

❑ How do you generate information about infection sources and factors contributing to transmission within and between villages ?

- ❖ Breed (Exotic, Indigenous, Mixed)
- ❖ Cattle herd size (Small 1-4, Medium 5-10, Large >10)
- ❖ Dipping system in the farm (Yes/No)
- ❖ Breeding system (AI, Own Bull, Shared Bull)
- ❖ LSD vaccination (Yes/No)
- ❖ Replacement cattle (From own herd/From outside)
- ❖ Watering system (pipe water/ Communal water; river, dams, pond, lake)
- ❖ Grazing system (Zero-grazing/Free-range)
- ❖ Apply mosquitoes net in the farm (Yes/No)

Evaluation

Evaluate the consequences of LSD infection of animals, such as production loss associated with mortality and morbidity

- Milk production
- Treatment
- Sick and death animal
- Cattle selling between healthy , sick and death cattle

Study size

- Province X
- Study design (case control)
- Number of sample size?
Used Epitools
(<https://epitools.ausvet.com.au/casecontrolss>)
- Total sample size (both groups); 94 for case and 94 for control group.

Risk factors associated with observed clinical lumpy skin disease in Ethiopia

(95 % CI 1.75–2.6). The odds ratio (OR) of LSD occurrence in midland vs. highland and lowland vs. highland zones was 3.86 (95 % CI 2.61–5.11) and 4.85 (95 % CI 2.59–7.1), respectively.

Significantly high risk of LSD occurrence was associated with communal grazing and watering management (OR 4.1, 95 % CI 2.02–6.18) and introduction of new cattle (OR 8.5, 95 % CI 6.0–11.0). Our findings describe the distribution of LSD in different agro-climates in Ethiopia along with associated risk factors, and can help shed light on the epidemiology of LSD in other

AND F. ROGER



EPITOOLS

Home Prevalence Freedom Studies Diagnostics Sampling

Sample size for specified values

Expected proportion in controls	0.05
Assumed odds ratio	4.1
Confidence level	0.95
Power	0.8
Study type	Case-control study
Sample size per group	94
Total sample size (both groups):	188

Sample size (per group) for range of proportions exposed and odds ratios

	P = 0.005	P = 0.01	P = 0.02	P = 0.03	P = 0.04	P = 0.05	P = 0.1
OR = 2	4749	2395	1218	826	630	513	280
OR = 3	1586	801	409	279	213	174	97
OR = 4	882	446	228	156	120	98	56

Summary /discussion

- Suspected case definition for study
- Case control study
- Sample size calculation (risk factor; Communal grazing)
- QGIS
- Stata for data analyses
- In-person structure questionnaire interview

Thank you for your attention!

