



- Case scenario control study
- Lao PDR
- Lao Team

How to investigate the outbreak ?

- Prepare for the field work.
- Establish the existence of an outbreak.
- Verify the diagnosis.
- Construct a working case definition.
- Find the cases systematically and record information.
- Perform descriptive epidemiology.
- Develop hypotheses
- Evaluate hypotheses epidemiologically

Determine Case definition and Control Household

Case definition : Household with one or more cattle or buffalo with **clinical signs** high fever (40-41°C), loss of appetite, lacrimation, nasal discharge , mouth ulcers, enlarged superficial lymph nodes and multiple nodules on the skin and mucous membranes; history of positive test results from virus detection or serology from **laboratory records** from Jan 2019- August 2021.

Define controls

- **Control:** Household with one or more cattle or buffalo with **no clinical signs** history of negative test results from virus detection or serology from **laboratory records** from Jan 2019- August 2021.
- selected by assigning all non-case households in the same village with a unique identification number and selecting (**knocking doors every 3-4 households**) until the desired **number of control households was reached.**
- Case control ratio would be 1 Case :5 Control

Stakeholder involved

- The information provides by the local expert opinion or authority and **Village level elders**.
- Potential case household were initially identified through discussions with **DAFO's** and their staff including a review of written records of attended cases and rumored outbreaks.
- Consult with **local slaughterhouse, butcher, traders , private veterinarian, neighbouring village veterinary workers and Laos Women's Union or other cooperative groups**.
- Subsequent case household were identified through discussion with farmers affected with disease.

Source and transmission

- Cutaneous lesions and crusts Agro climates, communal grazing, biting fly and introduction of new animals are associated with the occurrence of lumpy skin disease
- The virus usually transmitted by direct contact between infected and susceptible animals during animal transportation and movement

Risk factors

- **Breed of cattle** : Indigenous /exotic /mix breed
- **Breeding system of cattle /Buffalo**: own bull /shared bull /AI)
- **Grazing of cattle /Buffalo**: Communal free range, feeding in shed, zero grazing
- **LSD vaccination** : Yes /No
- **Introduction of new cattle /Buffalo** (2-5 weeks prior to the outbreak)
- Questionnaire will be designed on the basis of risk factors, variables to include in the odd ratio template.

Study design framework

Factor of interest	Category	Cases (n)	Cases %	Control (n)	Control %	Odds ratio	P-value
Introduction of new cattle and buffalo in hers (2-5 weeks prior outbreak)							
Grazing of cattles	Free range Stallfed No grazing						
Breed of cattle	Indigenous Exotic Mix breed						
LSD Vaccination	Yes /No						

Evaluation points for consideration

- The mortality losses of the household
- The cost of treatment for the household to treat LSD cattle
- The costs vaccine and services fees.
- Decreased production particularly milk

Discussion

- The period /timeline for the case definition – what would be ideal period ? As longer the period more recall bias by household.
- How to prioritise the risk factors – should be include maximum for comparison in case control study design.
- Need quality time and participatory approach to develop, refine questionnaire and study design for case control before operation /field study begins.