



A Case Control Study of Lumpy Skin Disease In Neverland

Indonesia

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How to investigate the outbreak ?

- **Detect** a possible outbreak, define case from Lumpy Skin Disease Clinical Sign
- **Find** a case in an outbreak by field investigation
- **Generate** a hypothesis that associated between risk factor (exposure) and disease
- **Test** hypothesis through analytic studies
- **Solve** point of contamination and original source of outbreak vehicle
- **Control** outbreak,
- If cases stop, we can **declare** if an outbreak is over

Selection of cases and control

Study Period : June – August 2021

Epidemiology Unit : Household

Location : Neverland Country

Selection of Cases: Household with “One or more cattle seen with clinical sign **multiple skin nodule 1 – 5 cm diameter** with or without high fever (40-41 °C), loss of appetite, lacrimation, nasal discharge, mouth ulcers, and enlarged superficial lymph node during June – August 2021”

Selection of control

Household originating from the same and/or neighbouring herd for which no case report of Lumpy Skin Disease, during the same period of outbreak, and have the same risk factor.

Desired Ratio between Case and Control

1 Case : 3 Control

Risk Factor

- The presence of Vector around the household and its vector management
- Animal movement/ Introduction of new animal
- Practice Communal Grazing one week prior to outbreak
- Shared farming equipments

Stakeholder involved

- Farmers/Household (main source of data)
- Traders
- Animal Health or Livestock Officer
- Laboratory Diagnostician

Source and transmission

- Questionnaire
 - Management Farm (Practised Communal Grazing, vector control, other animal on household/ mix species, tools used in household, vaccination)
 - Animal Source and Movement
 - Geographical climate and condition
- Interview with Stakeholder involved
 - a. Farmers/Household : Asking about questionnaire above
 - b. Traders : collecting animal transaction data (source and health certificate) during study period
 - c. Animal Health or Livestock Officer : collecting animal movement data and animal health situation during study period
 - d. Laboratory Diagnostician : collecting laboratory test result if any related to Household case

Evaluation

The data obtained from questionnaire and interview will be analyzed by comparing production before and after disease, feed intake before and after disease, and carcass quality (affecting its price).

BUDGET PLANNING

Activities	Process	Total Cost	
		RP	USD
Forum Group Discussion (FGD)	Intensive animal health or livestock officer for 5 person	30.000.000	2.068
	Intensive LSD expert for 3 person	60.000.000	4.130
	Travel expense for LSD expert	30.000.000	2.068
	Travel expense for FGD participants (100 persons)	140.000.000	9.655
	Snack and lunch	90.000.000	6.206
	Brochures and leafleats	7.500.000	520
	Stationary and Souvenir	50.000.000	3.448
GRAND TOTAL			28.095

Questionnaire

Lumpy Skin Disease Questionnaire

Date of Visit :

Enumerator :

A. General Information

1. Household address :

2. Household owner :

3. GPS :

4. Number animal owned :

a. Cattle

b. Bufflaoes

c. Sheep

d. Goat

5. Animal source :

a. Buy from animal market (Yes/NO) If the answer is Yes, where and when?

b. Buy from other household (Yes/NO) If the answer is Yes, where and when?

c. Other.....

6. Household geographical climate and condition observation result

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7. Is there any forest around this area? (Yes/NO) If the answer is Yes, How far is the forest from the settlement?

Questionnaire

B. Farm Management

1. Did you ever have LSD in your household? (Yes/No) If the answer Yes, When did it happen?
.....
2. Did you ever have LSD in other household around your household? (Yes/No) If the answer Yes, When did it happen?
.....
3. Do you perform Communal Grazing with other household ? (Yes/No) if the answer yes
4. Do you borrowing farming equipment from other household?
 - a. Yes, consisting of
 -
 - b. No
5. Is the cattle barn cleaned? If the answer Yes, When?
6. How do you do the handling of manure in cattle barn? How often?
.....
.....
7. If you keep Buffaloes/sheep/goats in your house hold, how you separate each species? (please explain)
.....
.....
8. Is there any blood-feeding insect e.g mosquito, biting flies and ticks around your house hold? Yes/No
9. If there any blood-feeding insect around, how do you deal with them? (Please Explain)
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.....
.....
.....
10. Do you vaccinate your cattle/buffaloes against LSD? Yes/No
11. If yes, which vaccine do you use?.....
12. Who vaccinate your cattle/buffaloes?.....

Study size

We assume 1 case occurs in only one herd, 1 herd consist of 10 house hold

- June – August 2021 : 12 case take place in 12 herd, and total 74 Household confirmed positive, and 46 household confirmed negative

Sample Size = 120 Household (74+46)

Ratio Case and Control 74 HH : 46 HH

Summary /discussion

- Potential Bias
 - a. Recall Bias
 - b. Selection Bias
- Preventing or Adjusting for Bias
 - a. Recall Bias : take data only June – August 2021
 - b. Selection Bias : take supplement data from other stakeholder (traders, Animal Health or Livestock Officer and Laboratory Diagnostician)